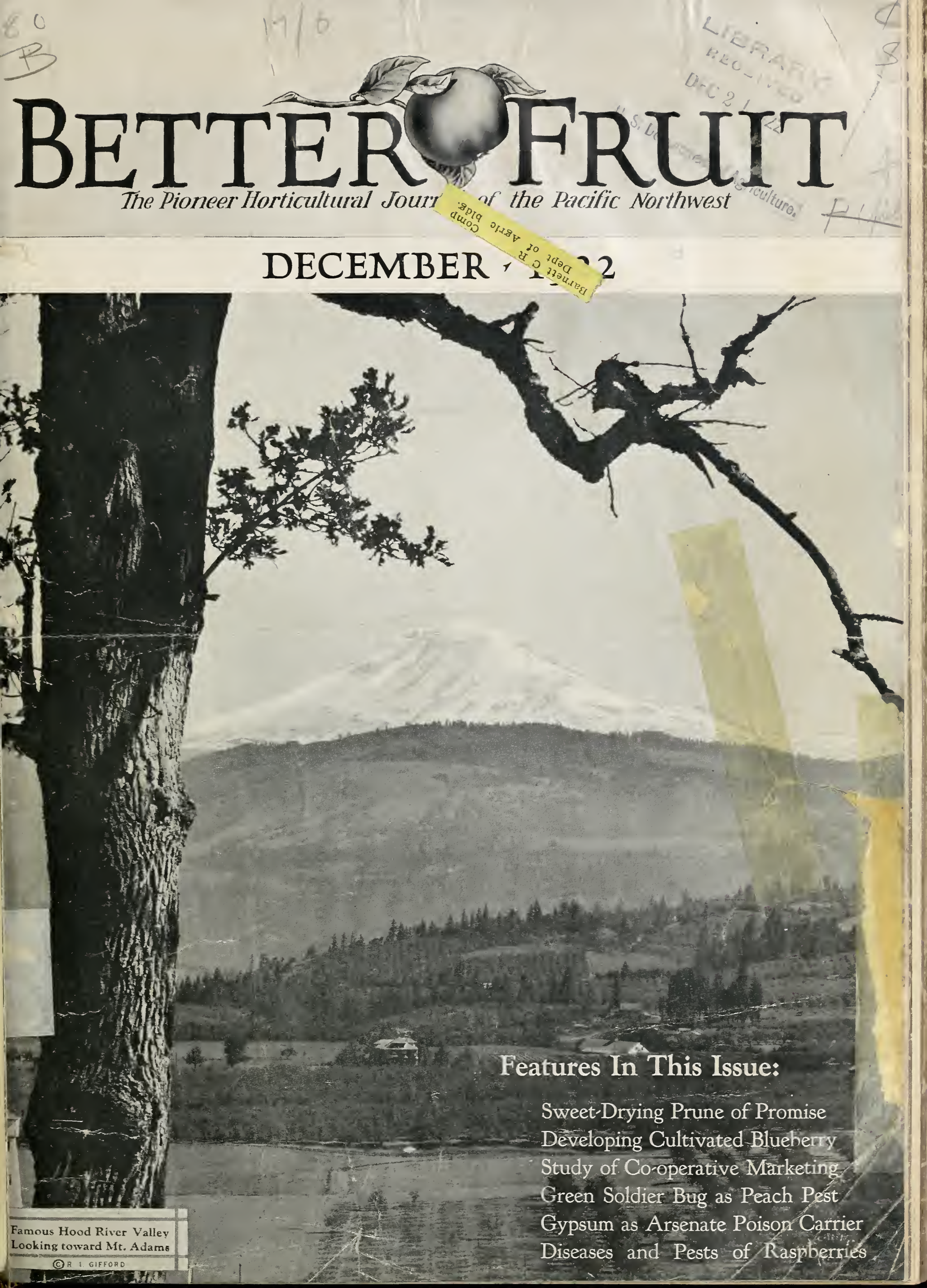


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BETTER FRUIT

The Pioneer Horticultural Journal of the Pacific Northwest

DECEMBER 1922

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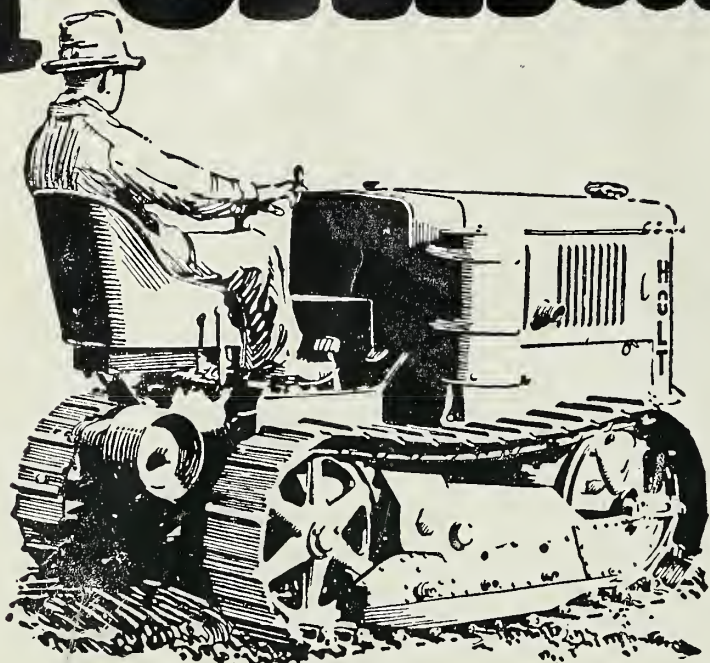
- Sweet-Drying Prune of Promise
- Developing Cultivated Blueberry
- Study of Co-operative Marketing
- Green Soldier Bug as Peach Pest
- Gypsum as Arsenate Poison Carrier
- Diseases and Pests of Raspberries

Famous Hood River Valley
Looking toward Mt. Adams

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BETTER FRUIT

The Pioneer Horticultural Journal of the Pacific Northwest

Entered as second-class matter April 22, 1918, at the Postoffice at Portland, Oregon, under act of Congress of March 3, 1879

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NUMBER 6

Developing Cultivated Blueberry

By ELIZABETH C. WHITE

New Lisbon, New Jersey

The blueberry and huckleberry are practically the same fruit. Had it ever occurred to you that there might be commercial possibilities connected with the domestication and cultivation of this berry? Whether it has or not you will want to read this highly enlightening article dealing with this very question. One fact alone presented here may start some readers of BETTER FRUIT to thinking—and experimenting. It is the fact that this berry has been bred up to treble and quadruple the size of the wild fruit. Picking is the big item of cost in putting huckleberries on the market. When the berry is bred up to the size of a grape, as here reported, picking becomes a very different matter, does it not?

MILLIONS of dollars worth of blueberries are sold every year. Practically all of these are gathered from swamps, hillsides and wild pastures, where they grow without human aid. I regard the commercial importance of this unimproved fruit as an indication of the immense popularity that awaits the better blueberries now being developed.

Blueberries have been cultivated in a few places for several years. There are small fields in Indiana, Florida and other states. Attempts to cultivate them have most frequently failed, however, because the plants were set in soil of neutral or alkaline reaction such as is best for most garden crops.

NECESSARY CONDITIONS—Blueberries require an acid soil, preferably one composed of peat and sand. This is the most important discovery made by Frederick V. Coville of the United States Department of Agriculture, who has made a careful

study of the fundamental laws governing the growth of blueberries.

A controlled supply of water is of equal importance with an acid soil to the welfare of blueberries. Their roots must have a continual supply of both moisture and air. It is easy to understand that blueberries need plenty of water—we see them growing in swamps and very wet places, but under New Jersey conditions at least, their need of good drainage is less apparent. Every thriving wild blueberry bush, however, no matter how watery its environment, has access to some tussock of moss or heap of loose, partially decayed vegetation through which both air and blueberry rootlets freely penetrate.

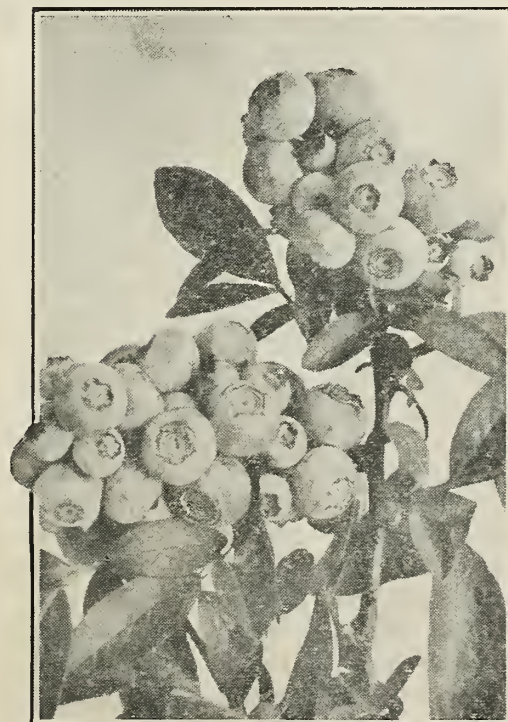
The necessity of cross pollination is a third important law explained by Mr. Coville. Many blueberry plants are en-

tirely sterile to their own pollen. On other plants berries may set when self-pollinated, but if so, they are slow in developing, never reach full size and the seeds and resulting plants lack vitality.

The fact that low temperatures are necessary to stimulate various phases of the development of the blueberry is not generally realized. For successful breeding and propagating it is important to know the amount of chilling a plant or cutting must experience before it will start normally. Blueberry seeds will not germinate till the nights attain a certain low temperature, and pollination of the flowers cannot be successfully accomplished if the night temperatures are too high. In outdoor culture, of course, normal seasonal temperatures provide these conditions.

DEVELOPMENT HISTORY—After reading Mr. Coville's bulletin "Experiments in Blueberry Culture," I wrote the Department of Agriculture offering to co-operate in further experiments. The letter was based on the idea that my father and I could contribute experience that would be valuable in the development of this new culture and that, when tamed, blueberries would make for us a valuable secondary crop. Our primary crop is cranberries—for three generations we have grown them at Whitesbog. All along the dams and about the margins of the cranberry bogs the high bush blueberry or swamp huckleberry as we call it in New Jersey grows wild. Blueberries and cranberries are close kin.

For ten years we have worked in close co-operation with Mr. Coville. When his breeding work developed so it was desirable to try the seedling plants in the field, the trial grounds were rented at Whitesbog. I believe the co-operation of science with experience in the commercial culture of a closely allied fruit has



Cluster of Pioneer blueberries much reduced. The larger berries shown here measured five-eighths of an inch in diameter.

hastened the development of better blueberries.

In this co-operative development my part has consisted chiefly in the selection of fine wild plants, and in developing methods of field culture and of propagation on a commercial scale.

WILD STOCKS—In locating good bushes I have depended almost entirely on the people who pick wild berries for market, and large size of the berry was the only point considered in making the first selection. More than a hundred plants with berries five-eighths of an inch and over in diameter were located within 20 miles of my home in New Jersey. Two of them bore berries three-fourths of an inch in diameter.

Each of these selected plants was divided into many pieces from which new plants were started. Thus each original bush yielded from five to 500 new plants.

INDIVIDUAL CHARACTERISTICS—The young plants from each original bush have been kept entirely separate and we find that each lot has its own peculiar set of characteristics, entirely distinct from the characteristics of any other lot. In very many cases the young plants show characteristics which explain peculiarities attributed to accident when observed in the original plant. Thus; Earlin was the tallest plant I ever dug—over 12 feet high—and the youngsters are a leggy, gawky lot.

Haines No. 9, though gnarly and seeming very old, had an appearance of vigor which led me to believe the young plants would be clean-cut and aristocratic. But no! every one, as soon as it is past its infancy, looks old and gnarly. The original Adams plant grew on the bank of a brown stream which at high water had washed bare several large roots which were bent at right angles on themselves; a mere accident apparently, and yet every Adams plant of two years old or over, that I have dug, unlike other blueberry plants, has had a number of its larger roots bent at right angles. Rubel was a large plant, beautifully symmetrical, with smooth bark and a fine, well-balanced appearance, and under cultivation Rubel plants have proven uniformly fine, well-balanced and vigorous.

The individual characteristics which make every seedling blueberry plant distinct from every other are innumerable. In connection with the fruit the important difference include size, color, flavor, texture and time of ripening. The berries on one plant may be gone before those on another begin to ripen.

Of great importance is the varying ability of plants to resist injury by frost. A remarkable example of this was observed in the early days of my blueberry work. It was past the middle of May when a hard freeze came. Such an event spells disaster for cranberry growers, so

the following day my father and I were investigating the extent of the damage when we observed two large blueberry bushes growing so close together that their branches intermingled. On one the young leaves, flowers and buds were uninjured; while on the other they were completely blackened as by fire.

Our selected plants varied in their resistance to frost injury, and the most tender have been discarded. None of them, however, were very susceptible—we unwittingly secured resistant plants

or asexual methods has resulted in much better blueberries than the average wild fruit; but from seeds produced by the sexual joining of two of these superior stocks we have opportunity for vastly greater improvement.

Mr. Coville is using our named varieties of blueberries as parents in his breeding work. Besides those from New Jersey he has a few from other states.

METHODS OF BREEDING—The methods of carrying on the breeding in the greenhouses at Washington are very interesting.



This is a New Jersey packing house where blueberries are being prepared for sale and shipment

because most of them were located in years when wild blueberries were seriously injured by frost.

NAMED VARIETIES—Six only of more than a hundred lots of plants proved worthy of further multiplication for commercial fruit production. These are known as the Rubel, Harding, Sam, Dunfee, Adams and Grover; each name perpetuating that of the discoverer of the original plant. These named varieties of blueberries are as distinct, one from the other, as are varieties of strawberries, apples or any other fruit. The berries of all have fine flavor and the seeds are so small that most people call the berries seedless. In size they average over half an inch in diameter, and an occasional one is found three-fourths of an inch across—as large as a Concord grape.

This selection of the best wild blueberry plants and their increase by division

The plants which Mr. Coville desires to cross are chilled, either in a refrigerator or out of doors in winter. They are then forced in a house with carefully regulated temperatures. If one plant develops faster than its destined mate it is held back by being placed in a frame where the temperature is kept slightly above freezing by an electrically controlled refrigerating machine.

The flowers are hand pollinated. A careful record of date, pollen, parent, etc., is written on a tiny tag which is attached to each cluster of pollinated flowers.

The seedlings resulting from this careful tedious work are cared for in Washington till a year old. They are then sent to the trial grounds at Whitesbog and set in the field about September 1. The second summer in the field they usually produce a few berries, and the

(Continued on page 18)

Diseases and Pests of Raspberries

By C. O. WEISS

District Horticultural Inspector, Everett, Washington

CROWN gall disease has been found in this district on raspberries. More and more cases are brought to light each year. As is well known this disease is characterized by formation of galls or knots on the roots or other parts of the plant. These galls may be formed at the crown, that is, just below the ground on the main stem. They may also form on the stem above ground, the trunk or the branches.

In the case of berries the trouble forms what is known as cane galls, soft whitish gall which breaks out from the inside of the stem. This type usually forms in the spring or early summer and turns harder and darker during the season. The disease produces gall most rapidly during the period of rapid growth of the plant. This is in the spring of the year, usually and the progress of the disease at that time is alarmingly rapid on some of the cane fruits.

When raspberry plants are suffering from a large amount of crown gall on the roots the plants may not succumb to the trouble for several seasons. However, they become very unproductive and slowly die from season to season. In addition to not yielding a crop they are a menace, in that all infected plants are a source of infection to the soil and also to new fields through taking from them new plantings.

The crown gall disease is caused by the action of bacteria. These bacteria enter the cells of the plants and cause them, through stimulation either by their presence or their products, to develop the larger over-growths. The bacteria are present in the tissues of the galls rather sparingly in the new tissues and more abundantly in the old. These germs are set free into the soil through the decay and sloughing off of galls under ground and from there can infect new plants which happen to be set into such infected soil. The bacteria are able to enter through wounds in the roots. In most cases the disease has come about through planting of stock which had the disease, or planting stock which had come from diseased fields in the first place.

THE usual way and the only way this dangerous disease is spread is by the use of diseased, infected stock for planting. Do not use any plants from a field that has any of the trouble in it. Some plants may show no galls above ground, but may have them on the roots. Often plants will be taken up and the galls

This paper was presented at the midsummer meeting of the Northwest Association of Horticulturists, Entomologists and Plant Pathologists. It is chiefly for the benefit of the grower, showing the pests and diseases Washington state horticulturists have been confronted with in making their inspections and answering requests of fruit growers for aid and guidance.

The writer expressed indebtedness to Arthur Frank, plant pathologist, and J. L. Stahl, horticulturist of the Western Washington Experiment Station, for their co-operation and assistance in giving data for the paper.

broken off through the process of pulling up. Young plants in a diseased field may show absolutely no sign of the disease, but will be infected nevertheless. Such plants later often produce galls in abundance. If there is any disease in a field no plants whatever should be taken from it. Quarantine number six established by the Washington State Department of Agriculture places an infected field under quarantine and makes it a misdemeanor for any plants to be taken from it.

Control of the crown gall disease is a difficult proposition. The best way is not to get it in the first place. When a berry plant is seen affected with this trouble, take it up at once and destroy it by burning. Then examine carefully the surrounding plants for evidences of the diseases on the roots. If any surrounding plants are affected destroy them also. Careful and rigid inspection of the field for the presence of the trouble and destruction of affected plants is the only practicable remedy. Field inspection is not complete without digging up a large number of plants in a search for root galls. It is against the law in our state to sell nursery stock of any kind affected with this disease and also to sell berry plants of any kind from fields without an inspection tag of the Department of Agriculture. Growers should not accept stock without the proper inspection by a duly constituted authority.

MUSHROOM ROT ON BERRIES—Mushroom rot has been more or less prevalent in this district on raspberries. Many new cases are being found. In the case of raspberries it is doing more damage in the older fields. In order to do extensive

damage the disease usually takes some time to become established.

The fungus attacks the plants at the crown and the roots. The mycelium or small strands of fungus grow upon and within these parts of the plants affected and cause the wood to rot. The disease is slow-acting and may take several years to kill a plant. On the berry plants the disease gradually takes the older parts of the crown and causes it to rot and die. The roots below often may die also. On plants where the old crown may be badly affected with the trouble the new crowns formed may escape for some time and thus, although the disease may be present, the tops may not show the effects at all for some time.

On the other hand the crown may be killed so that the foliage of the top will become sickly yellowish and reddish in color and the bearing canes dry up just before the berries ripen. The presence of the trouble can be told by finding the peculiar bodies called rhizomorphs on the affected parts of the plant under the ground. These are long black strands, shoestring-like in appearance and about the size of the lead in a lead pencil or slightly larger. These grow over the surface of the affected parts, attaching themselves at frequent intervals. These rhizomorphs are simply bundles of the white mycelium of the fungus covered with a black or purplish covering.

Rhizomorphs will frequently grow through the soil from plant to plant. This soil is often well filled with these growths. This is particularly true of raspberries, where the rhizomorphs will grow from hill to hill along the row. The fungus may give rise to its fruiting bodies which are the familiar mushrooms or so called toadstools. These will appear closely surrounding or growing from the affected plant. The mushroom root rot fungus is known as *Armillaria mellea*. This fungus is more apt to be present in soil where timber has grown or where decaying wood is present. Spots where old stumps have stood frequently have the fungus in the soil. The fungus is particularly apt to be present in newly cleared land.

CONTROL of the root rot is a difficult matter. It is best to avoid newly cleared land for at least three years or more, using other crops instead of fruit trees or berries. It is suggested that when affected plants are found the crown and roots be removed and burned. The soil

should then be removed from where the plant stood for a depth of about two feet and for about two or three feet in diameter. Refill this hole with dirt from some other place in the field where the soil is free from the trouble and then replant at once. Another practice is to dig around the roots of the plants nearby that may not be affected and find the rhizomorphs in the soil, gather and burn them.

A common practice in other parts of the country is to use the ditch. If only a small spot should be found in the field that is affected with the trouble, dig about a two-foot ditch entirely around it, throwing the dirt removed back onto the affected ground. This will prevent the rhizomorphs growing through the soil. In berry fields often just a few plants will be found to be affected. Other plants may have a considerable fungus present and show no effects from it as yet.

Careful watch of the field and prompt examination of any plants showing the trouble will enable the grower to save plants affected not only with this trouble, but with many others. Neglect generally means the difference which causes failure.

ANTHRACNOSE OR PLECTODISCELLA VENETUM-SPAG—Although the anthracnose is a serious trouble with red raspberries in some of the eastern growing localities this is not the case with it in the northwest as yet, although some may be found by careful search in almost every field. In view of its possibilities, growers are urged to cut and destroy by burning all canes or shoots found with this trouble on them simply to prevent the trouble getting a start and to keep it down so far as possible. The trouble may be recognized by its forming small white oval spots on the canes and also on the laterals. Generally, the spots are more abundant near the ground although the trouble may get spread through the entire upper part of the plant, appearing in some cases as leaf spots also.

Control of anthracnose of the raspberry consists of cutting out diseased canes when seen, as stated above, although, in serious cases, spraying may have to be resorted to. The trouble is economically and successfully controlled by the two applications of spray in the spring. The first application is given when the blossom buds are swelled, but not yet open, using Bordeaux mixture 5-5-50. One pound of resin fish oil soap, or whale oil soap was used per 50 gallons of the spray to aid in sticking and spreading. The second spraying was made two weeks after blooming when the fruit is about half grown and Burgundy mixture is used. (CuSO₄ 2 lbs., Sal soda 3 lbs., water

100 gallons.) Use soap also with the Burgundy.

These materials covered all the parts of the plant and formed a coating so that when the spores of the fungus were deposited on the protected plants they could not grow and infect it, being killed by the fungicide. Attention is called to the fact that the anthracnose is not a rapid spreading trouble, owing to the fact perhaps that its seeds are not wind-carried because of their stickiness.

The most common method of dissemination of the trouble is the use of infected stock for setting in the field. Plants taken from an infected field are often severely infected and the disease is spread and established in a new field by such plants. Do not buy or use any infected plants. Secure stock from a field that is known to be healthy.

SPUR BLIGHT, due to **FUNGUS MYCOSPHAERELLA-RUBINA**—Spur blight is a common trouble on the red raspberry. It is caused by a fungus which works on the bark of the canes and sometimes kills the buds on the lower part of the cane. The fungus appears in the middle of the summer on the new shoots and is first noticed as a chocolate, purplish-brown area on these canes. The spots are first seen just below a bud usually. It is thought that the disease attacks the leaf petiole first and travels down these to the cane. These areas gradually spread until many of them run together and much of the entire surface of the lower part of the cane is involved.

Later, in the winter, the affected bark turns white and becomes shredded and loose. Sometimes canes severely affected are so white they look as though they have been whitewashed. In mid-winter, on this bark, may be seen little black pimples. These are the developing spores or seed cases of the fungus. In the spring, when the new shoots have started, the spores or seeds are discharged from these cases and get on the new canes and start the infections on them which later in summer show up as the chocolate brown areas. The damage is done by killing the buds on the lower part of the cane. Often, though the disease is abundant, not much bud killing will take place. The trouble is most common on the Cuthbert and the Antwerp.

The control of this disease has been worked out and should severity of the trouble demand, the control measure should be applied. Put on three applications of weak Bordeaux mixture 2-3-50, plus two pounds of fish oil soap, finishing before picking time. Start when the new shoots are about 6 to 8 inches high and spray the new shoots only and every ten days after this. The object is to cover them with the fungicide and to

keep them covered until they are grown so that the spores, when they fall on the canes, will not be able to grow.

(Continued next month)

Browning of Newtowns

INTERNAL browning of Yellow Newtown apples is not caused by a parasite, but seems to result from conditions within the fruit itself, according to a new bulletin issued by the United States Department of Agriculture and which sums up the result of four years' work. The trouble is particularly serious in the Yellow Newtown apples grown in the Pajaro valley.

This variety and some others develop a brown discoloration in the flesh of the fruit when kept in cold storage for a long season. The trouble is more prevalent following seasons of light production; and fruit from trees that produce small crops is more subject to it than fruit from heavy yielding trees. Heavy fertilization with manure increases the percentage of browning, and heavy use of nitrogen fertilizer produced a marked increase in the fruit from all trees except those bearing a very heavy crop. The trouble, however, does not develop seriously if the storage temperatures are held at 36 degrees or above. It usually develops more rapidly just after the fruit is taken out of storage.

When there is a light crop of large-sized apples serious losses may be prevented by holding at a temperature of 36 degrees or above. The danger is slight when the crop is large. In general, the trouble may be looked for in Yellow Newtown orchards of high fertility in the California coastal fog belt where the humidity is high and there is little sunshine.

Copies of the publication, Department Bulletin 1104, entitled "Internal Browning of the Yellow Newtown Apple," may be had without cost from the United States Department of Agriculture, Washington, D. C.

Bartletts in Blocks

California experts are advising against the planting of Bartlett pears in large blocks. It is held that experience and tests show that Bartletts are much more likely to produce good crops with other varieties, particularly Winter Nelis, planted among them. Professor W. P. Tufts of the University Farm has been testing 25 varieties of pears. Out of these 14 have shown a tendency to pollinate themselves under valley conditions; but most of them are rather self-sterile under foothill conditions. The Buerre Hardy has proved self-fertilizing under all conditions and in all seasons; but it is the only one.

Green Soldier Bug as Peach Pest

By WATT W. JONES
Salt Lake City, Utah

ACCORDING to discoveries made in Utah in the past two seasons the Green Soldier bug (*Nezara hiliaris* Say) has a fondness for peach juice which has made of him a serious pest in some peach orchards. This bug is rather widely distributed, being known to most persons under that homely name of "stink bug." It develops that, on occasion, he feeds on the juice of peaches from the time the fruit is well formed until it is harvested.

Two crops of one large Davis county orchard appear to have been ruined by this pest during the past four years. The manager of the orchard noted the presence of the soldier bugs soon after first seeing the damage, but did not suspect them as they were only common green "stink bugs," such as are seen on many plants. It was only after sending damaged fruit and letters of inquiry to many different points in the United States that he learned from Ohio Agricultural Experiment station the real cause of his losses.

So far as learned this type of insect damage has been unknown, or rare, in the west. Furthermore, the experts state that the bug, although common throughout the west, has not been known as a pest. Specimens of the Green Soldier bug collected in a Davis county peach orchard, however, have been identified by a specialist in San Francisco. Fruits apparently damaged by the bug have recently been reported also from Boxelder and Utah counties. Accurate observers report the insects as having been especially active on the fruit in the last named county.

The attention of the Ohio Agricultural Experiment station was first called to this pest in 1911, a year in which the damage was very severe. Although the same insect and its near relatives have been well known enemies of the fruit and cotton industries in the south for many years, this was thought to have been the first outbreak in the north.

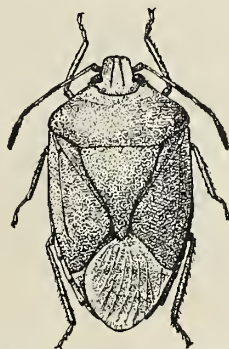
HISTORY OF BUG—The eggs of the Green Soldier bug vary in color, from light yellow to light green. They are oval, and larger at the top or cap end. The female lays her eggs in masses and attaches them to a leaf by means of a cement-like substance, which she secretes. Just before hatching, the eggs take on a pinkish shade, which finally becomes almost red. They measure about 1/16 of an inch long and 1/32 of an inch at their greatest diameter.

The full grown bugs are generally three-quarters of an inch long, but may

be considerably smaller. They are green or yellowish green in color. Although able to fly they are not easily disturbed and can be caught without difficulty.

The adults hibernate in leaves and trash in the orchards when the weather becomes cool in the fall, probably late in September. They become active in the spring in May or even earlier. Eggs are laid early in June and each female may deposit 50 to 75. In about a week orange-yellow "buglets" with red heads and maroon eyes burst from the eggs. Their color changes somewhat in a short time and their depredations begin. They remain huddled together for four or five days and then scatter. It is estimated that one bug may damage 4 or 5 bushels of fruit in its life, which covers a little more than one year. The bugs thrust their long beaks into the fruit to suck the juice and thus prevent perfect development of the peach.

Since this pest does not bite or consume the surface upon which it rests it cannot be poisoned. Contact sprays can-



The Green Soldier bug, which is slightly less than one-half inch long in adult life.

not be used because of the dense foliage and the difficulty of getting at the bugs in the early stages. A related species attacking oranges has been controlled by jerking the limbs and causing the bugs to fall into a large net.

CONTROL METHODS—It would seem that the most successful means of combating the pests would be by cleaning up the fallen leaves and trash in the orchard during the late fall or early winter and burning it. It might even be desirable to place small heaps of trash in warm, dry places among the trees. These may be held in place by large weeds. When the bugs have crawled into these traps, they can be burned or exposed to the weather which, if severe enough, will destroy them.

Other plants which may serve as food for the Green Soldier bug are the apple, elderberry, silver and Norway maple, boxelder, catalpa, cabbage, beans, corn, egg plant, mustard, okra, pea, tomato, turnip.

Exposition Results

FOR the second time the Okanogan Government Project growers, Okanogan and Omak, carried away the big prizes at the Pacific Northwest Fruit exposition, held in Seattle, November 11-19. These growers took twenty-seven first prizes, five seconds and one third. With this showing they easily won the Steinhart & Kelly trophy cup and \$100 cash accompanying this award.

The American Fruit Growers of Wenatchee won the sweepstakes prize for the best box of apples, annexing the \$50 prize for this. Huntington Johnston, Yakima, was awarded first prize for the best individual display and R. T. Reid, Bellevue, captured second.

In the 10-box competition the Okanogan growers almost swept the boards, taking all first prizes but one. The varieties in which they were first were: Arkansas Black, Spitzenberg, Jonathan, Rome Beauty, Stayman Winesap, Winesap, Winter Banana, Grimes Golden and Gano. E. N. Bailey, Naches, took first on Delicious in this competition.

The Okanogan project apples won all but four firsts in the five-box class. The Keystone Ranch, Ephrata, was awarded firsts on Spitzenbergs and Rome Beauties. V. R. Oswalt, Okanogan, took first on White Winter Permain and B. W. Jones, Okanogan, won first on his five-box entry of Ganos.

The cash prizes were \$50 and \$30 for first and second, respectively, in the 10-box class and \$15 and \$10 in the five-box class.

There was a good attendance at the show, which was held at the Bell-street terminal, and a lot of interesting features had been worked up in connection with it. Seattle interests and people rallied to support of the exposition much better than in any previous year. The exhibits were of high excellence. This was particularly true of the big array of entries by the Okanogan growers. It was said that 15,000 boxes of apples had been picked over in obtaining their displays.

As had been the case in previous years there was disappointment because more of the noted apple districts of the Northwest were not represented. The Wenatchee and Yakima valleys did not begin to do themselves justice at the show, to say nothing of the other apple districts of Washington and the premier sections of Oregon which failed to participate.

Loganberries, raspberries and other cane fruits should be given a thorough fall spraying with Bordeaux 4-4-50 for prevention of anthracnose, cane-blight and other troubles. Be sure to cover the bases of the canes and the buds for next year.

Sweet-Drying Prune of Promise

By M. McDONALD

President Oregon Nursery Company, Orenco, Oregon

AS MOST readers will know, the word "prune" is the commercial term applied to the dried European plum, or *Prunus Domestica*. The real difference between plums and prunes is in that variety of plums containing a high enough sugar content to dry sweet. Plums very low in sugar—below eight or ten per cent in the ripe state—have a peculiar vinegary taste when dried, indicating that a certain amount of ferment has taken place in the process of drying.

Dried prunes, like many other forms of healthful foods, have come down to us from Europe. Just how long ago plums were first converted into what we call prunes there does not seem to be any authentic record. Certain it is that for very many years they have formed a healthful part of the diet of most European countries and of late decades have entered into the American diet in no small way.

Since the earliest uses of the plums in a dried form the varieties containing the highest percentage of sugar have been sought after because of their more palatable texture when dried and the further fact that the shrinkage from the ripe to the dried state is always much less in those plums containing a high sugar content than in those low in sugar. For this reason the small Petite D'Agen, commonly called French Prune (although its history indicates that it may have originated in Asia), was early sought after. It's sweetness and smoothness of flesh made it the fruit par excellence in the dried prune line, but its tendency to overbear and produce only small fruits has always been its handicap.

Another plum of the *Prunus Domestica* type that has found much favor is the Fellenberg, or what we commonly call the Italian prune. So far as we are able to discover, this name is purely local on this coast and there is no apparent foundation for applying the name Italian. It may not be generally known that this variety actually reproduces itself from seed. The writer knows of a clump of seedlings in Oregon of the Italian variety, every one of them alike. Since this variety has shown such decided weakness in the constitution of the tree in the standard type that has been propagated in Oregon, we wonder why some of our propagators do not attempt to give us a better type than the one we are now growing. The fact that there are four or five times as many sweet prunes grown on the Pacific Coast as there are of the tart kinds, is ample proof that the prune

of the future must contain more sugar than does the Italian variety, known to the trade as the "Oregon."

In order to meet the requirements of the trade for a large sweet prune, we have had Burbank's Sugar prune, the Imperial Epineuse from France, both large, but lacking in some one degree the necessary requirements for a perfect prune that will not only fill the bill as a grower's tree, but produce fruit that will meet all of the requirements of the trade in the dried fruit markets of the world. Many other seedlings have been introduced, but upon final test have been found wanting.

MR. COATES' EXPERIMENTS—It was left to Leonard Coates of California, who had held to one ideal through more than 30 years of experimental work, to find the long sought for large, sweet prune. For 30 and more years, Mr. Coates held to the principle that it was through selection of improved strains in the French Prune, Petite D'Agen, that this desired improvement in prunes would be found. At last when he found this prune growing as a mutation or sport of the French prune in Santa Clara county, California, one can imagine his disappointment when he discovered that there was no fixed type and that this mutation produced variations running all the way from the ordinary French prune, Petite D'Agen, to the large prune we now call

"Coates 1418" or Date prune, weighing 30 to the pound, orchard run, and reducing only 50 per cent to the pound in drying.

With that patience borne of long experimentation, he at once began the long and tedious process of eliminating these reversions and standardizing one of the largest and best types of this mutation. It was not until Mr. Coates had carried his experimental work through three successive fruiting periods, selecting from the best type for commercial purposes, that he felt justified in offering to the prune world that new variety that many think destined to revolutionize the prune industry of the Pacific Coast.

Had it not been for the patience and perseverance of Mr. Coates in continuing this experiment through years, this gift of nature's might have been lost to the world in the mass of variations propagated from buds taken promiscuously from the original variation in the French prune. As it is, we have a fixed type of this new fruit marvel, the Date prune, and a ten-acre orchard to which to go each year to draw a pure strain of buds for propagating purposes.

It has been said that in its two big differentials—low shrinkage in drying and large grades, this prune will from a given number of pounds of ripe fruit make the grower three dollars for every dollar he now makes from the old varieties.

(Continued on page 18)



Above are fruits, leaves and stone of the "Coates 1418" prune and below are those of the ordinary French variety.

Study of Co-operative Marketing

By ASHER HOBSON

Specialist in Market Research, Columbia University

THE co-operative marketing movement is spreading among farmers and fruit growers. This movement is of interest to consumers. In some respects it is a matter of apprehension. Especially has there been some uneasiness as a result of the recent passage of federal legislation giving these co-operative associations a new and different status under the anti-trust laws. Furthermore, the rapid growth and the gigantic size attained by some of these associations are matters of concern to the final purchasers of the farmers' product—the housewives.

Within the last few years, and more especially within the last five years, farmers' co-operative organizations have developed to a point where it is not unusual for an association to number its members by the thousands and to measure its yearly volume of business in millions of dollars.

One company has a membership in excess of 65,000 farmers, each bound to the organization by a contract whereby the member agrees to appoint the association as his exclusive marketing agency for a given product over a term of years. It is the universal use of contracts such as these that has gone far in making co-operation among growers a business reality.

The admitted purpose of these associations is that of obtaining greater returns to the grower for his products. Is such a purpose in harmony with the interests of the consumer? Will a higher price to the grower mean an increased levy upon the final purchaser? Will the grower through his organization exert a monopoly power? These are the questions which form the basis of the consumers' interest in this movement.

It is sometimes held that the interests of growers and the interests of the consumers are akin to the interests of capital as compared with the interests of labor—more points of difference than agreement.

In order to answer the above questions it is proposed to analyze the price policies of a successful growers' organization of national scope. The American Cranberry Exchange has been chosen for this analysis. There are a number of reasons for making this choice. This organization is one of the most successful in the country from the growers' standpoint. It has been in operation for fifteen years. The exchange markets over two-thirds of the entire cranberry crop. Its members are composed of growers in the three prin-

Here is an article on co-operative marketing, written chiefly from the angle of the consumer. As such it advances some facts and findings that probably have as much value to members of a co-operative producers' organization as to the consumer who buys its products. In short, it advances arguments to answer the most frequent challenge to the co-operative growers and sellers' bodies—do they not menace interests of the consumer public through ability to control output and fix prices?

cipal cranberry districts—Massachusetts, New Jersey and Wisconsin. Few organizations have succeeded in uniting growers in so widely separated sections. In addition to the above accomplishments, these growers sell their product in practically every state in the Union, and in Canada as well.

It can readily be seen from the description that this association is in a strong position in the marketing of its product. Certainly few farmers' organizations can hope to obtain a more favorable position in the control of so large a percentage of the entire production. Hence it would seem as if the cranberry growers, through the American Cranberry Exchange, were in an excellent position to push their own interests without regard to the interests of those who eat their fruit. What are the facts? How does the co-operative sale of this fruit affect the price to the consumer?

Because of the continued success of this organization and because of its control of the distribution of so large a percentage of the total crop, the writer made an extensive study of its sales methods and price policies, with a view to ascertaining their influence upon retail prices. Below is a discussion of the findings of this study.

SINCE the organized growers control the marketing of over two-thirds of the total production, it might be concluded upon first thought that they were in a position to control the price of their fruit. A brief analysis, however, shows the near impossibility of price control of this fruit and of agricultural products in general. In order for a commercial agency to fix arbitrarily the price of a commodity, it is necessary that the agency

control the amount produced as well as control the marketing of a large quantity of that which is produced. The cranberry growers are in a position to control within limits the marketing of a large portion of the production, but they are not in a position to say how much or how little is to be produced and offered for sale. It is this factor that makes price fixing of agricultural products through monopoly a mere dream.

PRODUCTION FACTORS—The amount produced of an agricultural crop during a given year depends primarily upon two factors: (1) the number of acres in bearing and (2) the yield per acre.

To my knowledge, no co-operative marketing association has made a serious attempt to reduce the number of acres devoted to the culture of its products. There have been general movements to reduce cotton acreage, and the past year has witnessed propaganda designed to discourage the planting of the usual amount of corn. These movements, however, are not connected with specific marketing associations. It is doubtful, indeed, if an association could influence to any great extent, the acreage devoted to a given product.

If a certain product yields a good return over a period of years, the acreage devoted to this product will increase as a matter of course. If, on the other hand, returns are small, acreage will decrease. Hence it is only by the indirect method of price secured and its relationship to cost of production that an association influences acreage. Certainly the American Cranberry Exchange has no power to say who shall or who shall not grow cranberries. Furthermore, the exchange owns no fields. It is merely an association of growers. It has no influence with its members as to how little or how much of the product each shall grow.

The second factor influencing supply, —yield per acre—better illustrates the futility of control by co-operative associations. Weather conditions, disease and insect pests, beyond the control of the grower, may double, cut in half, or practically wipe out altogether the yield of a given district. In short, the possibility of artificially regulating the amount of an agricultural product which shall be grown during a given season, is beyond consideration.

The American Cranberry Exchange is a successful growers' organization, yet it handles a product most difficult to market. The cranberry is perishable and cannot

be held for long periods; it must be sold while in prime condition. The consumer need not buy unless he wishes. The ease with which the cranberry may be omitted or substituted in the diet of the average American family makes it impossible to fix arbitrarily the price, even though the association controlled the entire supply.

Since the association cannot regulate the amount produced and since it is not in position to set the price, what then, is the reason for its success? The satisfactory results obtained by the organized grower of this product is due largely to the realization on the part of the management that (1) widespread distribution among people of all economic classes is necessary for the consumption of the normal supply, and (2) if this widespread distribution is to be obtained, the good will of the consumer is essential.

WITH the increase in acreage and its resulting increase in production, the grower has come to realize that the family of the laboring man must be added to the family of the business man and the professional man as cranberry eaters, if all the normal supply is to be consumed at a satisfactory price. One of the most effective ways of placing this fruit on the

laborer's table is to sell it at a price he can afford to pay. Hence one of the definite policies of this organization has been that of attempting to secure for its berries a fair price which will "clean up" the supply during the short selling season of approximately four months, but at the same time, taking care that the price does not go so high as to discourage consumption by the two large classes of our population, laborers and farmers.

Experience has taught the grower that his best interest is closely connected with continuous demand; that is, a demand which does not fluctuate greatly from season to season. He has learned that the cranberry taste, which has gone uncultivated during a season of high prices, is difficult to win again. Hence it is not the desire of the association that berries be sold at prices making them a luxury.

PRICE CONSIDERATIONS—The growers' agency had an unusual experience during the past season in its attempt to keep the price of cranberries within modest limits. Marketing studies have shown the company that an association price of 15 cents per pound to the wholesaler will permit a retail price of 25 cents per pound. It is the belief of the association that a price higher than 25 cents per pound retail is

a detriment to the grower, for the reason that it cuts off the sale of berries to a large class of consumers so necessary for the disposal of a normal crop. Hence it is the desire of the association that the bulk of berries go into consumption at a price not to exceed 25 cents per pound.

Last season the crop was about 20 per cent short of normal. The association price started at 10½ cents per pound to wholesalers. It soon advanced to 15 cents. In order to keep it from going above this price, the association kept throwing its berries on the market and increasing the supply. As a result, the berries of the association had been entirely sold by January 1—an unusual experience. The average price received by the company was slightly over 13 cents per pound, a price which would admit of a retail price of 25 cents or below. A higher price than this is believed by the organized growers to be a detriment to their industry.

Here was an actual attempt by an organization of growers to keep the price down rather than to raise it, a desire based upon the realization that their well-being depended upon the good will of consumer and his attitude toward their product.

What is true with cranberries is largely true with other agricultural products. Here is a successful farmers' association which controls the marketing of an unusually large proportion of the supply of the product with which it deals. It is an example of strength among organized growers, yet it has risen to its position not through monopoly power, or price control, but largely through catering to the good will of the consumer—an example which other associations must follow if they are to occupy similar positions on the pinnacle of co-operative success.

Utilizing Apples

THE thoroughness with which the apple is now worked over and utilized by some manufacturers makes it comparable with the packing-house pig that leaves only a futile squeal. The apple is not transformed into such a variety of products as the pig, but all are useful, and when the last of the series has been made hardly a smell is left.

In many of the apple-using factories the apples are first pressed to produce cider, which may be sold as such or may be manufactured into vinegar. After thoroughly pressing the pomace is treated with hot water to remove the pectin, which, after purification, is sold in either liquid or solid form to manufacturers of jellies and similar products and to housewives. The much-wasted and squeezed residue is dried, ground, and sold as cattle feed.



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"FRIEND" SPRAYER

Gypsum as Arsenate Poison Carrier

By PROFESSOR GEORGE A. OLSON

THE control of the ravages of leaf eating insects is one of the many things a farmer or fruit grower has to attend to and it is a very important undertaking since much of the success in crop production depends upon the care exercised in checking leaf injury. The degree of success must necessarily vary because of nature, composition and strength of the poison. The ease and thoroughness of applying it are also important factors.

Various poisons are made, but in practice some of them appear to be more effective than others, or there may be some reason, such as foliage burning, which makes them objectionable to use. In some localities growers continue to use paris green, while in others it has been abandoned because arsenate of lead appears to be an effective insecticide and also appears much less injurious to the foliage. More recently arsenate of calcium has been substituted for arsenate of lead.

The poisons are applied in both liquid and dust spray form. The dust spray, however, appeals to the farmer since it can be applied more advantageously than the liquid form. In order to keep down the cost of application, however, it is advisable to use a carrier such as agricultural gypsum. At the same time there must be plenty of poison carried in the mixture to cover the growing parts of the plant.

A combination of one part of arsenate of lead mixed with 50 parts of agricultural gypsum is effective against such insects as the potato beetle, alfalfa beetle, caterpillars and other leaf insects. Some prefer more than one part of arsenate in the mixture. It may run as high as two and one-half parts of arsenate of lead to 50 parts of agricultural gypsum. In exceptional cases five parts of arsenate of lead and 50 parts of agricultural gypsum may be used. Arsenate of calcium is also used in the above proportions. A combination of one pound of paris green and 99 parts of agricultural gypsum is used in some localities.

The more arsenical used in the mixture the greater will be the danger of leaf burning and this tendency must be considered regardless of the nature of spray used. There is also point of economy which must be considered since the more arsenical used the higher will be the cost of application. There are also winds and rains to contend with and as a result it frequently becomes necessary to apply the mixture several times before one can completely check the injury.

The injury brought about by the cu-

cumber beetle appears to be more serious than that produced by most insects. The spotted disease (termed mosaic) is attributed to the cucumber beetle. It is claimed to be due to a virus (protozoa attack of chlorophyll) which enters the punctured leaf. The wilt disease is induced by the young beetle or grub which feeds on or in the stems under ground or under the vines or on the soil surface.

The cucumber beetle attacks cucumbers, squash, melons and other related plants. In some sections the growers have been forced to abandon the growing of cur-

curbits simply because they did not know that the mosaic disease might be spread or the wilt might be caused by the direct or indirect activities of the beetle.

As a result of dusting the cucumber plants at a very early stage of growth, a preparation consisting of one pound of arsenate of calcium and 20 parts of agricultural gypsum (land plaster) the Ohio Experimental Station obtained 330 pounds of cucumbers per acre. A preparation consisting of one part of arsenate of lead and 20 parts of agricultural gypsum produced 293 pounds of cucumbers while the check plots produced only 123 pounds.

Agricultural gypsum mixtures do not

(Continued on Page 26)



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VOL. XVII, NO. 6

To You

To every member of our big family of readers and advertisers we extend felicitous greetings of the season and hearty good wishes for their happiness and prosperity in the 365 days of the new year.

Rather than say this in a perfunctory, everybody's-doing-it spirit we would omit saying it. There is a genial, loyal spirit of friendliness about this big family of ours that just naturally generates good will. The mails every day carry this to and from our desks. Once in awhile we stick a little of it into print, but by no means all of it.

You keep telling us we are laudably doing good work; we commend you producers of some of the world's finest food products for doing a finer work. You merit the best wishes of a lot of folks. We extend ours here and now, thankfully and whole-heartedly.

One Consolation

There remains one consoling feature in connection with the annual car shortage which has not yet released its grip upon the Pacific Northwest. This is the fact that apples are not going into storage in the Middle West and East in such quantities as have ordinarily been stored by this time of year.

In this connection a little thanksgiving seems in order because the crop in this section was evidently all stowed away before heavy frosts came. No reports have been noted of failure to get the apples under cover during the nice weather and before the rains and heavier frosts did any damage. It is true, of course, if you insist on looking at the darker side of things, that some of the crop may be located where a heavy freeze would damage it.

Experiences of previous years seem to have taught the growers a valuable lesson in this region, for never before have there been such extensive and adequate storage facilities as were available this season.

But the point we had particularly in mind was that because of the car famine the market on late varieties may actually be stabilized and strengthened. Those eastern centres are going to absorb as many apples this season as they did last season—a greater quantity we would predict. Last season a weak market through the the winter brought serious losses to shippers and had a disorganizing effect on the whole boxed apple industry. Despite the record crop of the current year it hardly seems possible that the industry will suffer similarly this winter.

High Standards

During the winter months conferences on grading and packing rules and regulations are of frequent occurrence. While they seldom get a serious hearing, there are nearly always some

growers on hand who wish a relaxation of the rules that have made boxed apples of the Northwest a standard envied all over the world.

Frequently there is encountered an alarmist who fears that once the eastern commercial apple growers awake to the situation they may start putting out a pack in direct and hurtful competition to that of the West Coast. Just to give an angle that may not often be thought of in this connection we will quote from a letter written by an eastern apple grower. It should make most of our readers throw back their shoulders and smile a bit, if nothing more.

Writing to the Fruit Trade Journal and Produce Record, this grower says: "I have noticed often that you place a great deal of stress on making a good pack in sorting apples. You are right, for the trade has been so badly spoiled by those Pacific Coast box apples that it doesn't pay to do anything else. Climatic conditions in the far west are different from what they are east of the Rockies, with more sunshine and less cloudy weather, so that what those western box apples lack in flavor they make up in general appearance (a libel, of course), and that takes the eye. In the Middle West and, in fact all over the Central West and East, in spite of all the grower can do, quite a large percentage of the apples show some imperfections.

"Now since the trade in the large cities refuses to buy anything but No. 1's, or the equal to western box stock, the secret in making orcharding pay is in finding buyers for the so-called under-grades."

Take heart, comrade, the battle of the markets isn't lost yet.

Kindly do not discontinue my subscription nor take my name from the subscription list as I value your paper highly and do not want to miss a number—F. B. Henney, Yucaipa, California.

Orchard Heaters

ACCORDING to estimates of the United States Department of Agriculture an average loss of \$60,000,000 is sustained annually by orchardists of the country through frosts and freezes.

This is too great a loss to be sniffed at. It must not be ignored even in the Pacific Northwest for it is a fact that this section, as well as practically every other fruit section of the continent, contributes to this loss. Conservative estimates place the average annual loss for the states of Washington, Oregon and Idaho, for illustration, at 10 per cent, running into millions of dollars. Some seasons, it is needless to say, the losses in each state exceeded the \$2,000,000 or \$3,000,000 average because of the severity of the frost or freeze.

The cash value of the fruit from an acre ranges from \$150 to \$1500. It is a certain fact that a grower who even had but 15 \$10 bills in his pocket and lost them would feel greatly provoked. If he had much more than that he would certainly safeguard the money very carefully. Yet the average grower is careless about protection and nonchalantly takes needless risks with the highly valuable fruit crop, to say nothing of the trees which bear the crop.

Every orchardist is reasonably alert to the necessity of plowing, cultivating, pruning, spraying or dusting. He spends much time, labor and money to prepare the soil and the trees for a maximum crop. He usually protects himself well, up to the point of providing insurance against frosts. Here he literally gambles with the weather man. He hopes there will not be a frost—with an income of \$150 to \$1500 per acre in the balance.

Why does the weather bureau take infinite trouble and expend large amounts of our government's money to disseminate frost warnings? Isn't it rather taking for granted that those served with the warnings have made provisions to use the information? The value of orchard heating practices is recognized by the weather bureau. It is continually extending its service of frost warnings to fruit growers, but the service is of small value to the orchardist if he does not equip himself with orchard heating apparatus.

It is foolish for growers of the Northwest or any other section growing deciduous or citrus fruits to sit back with a sense of false pride and security. It would be better for them and would help stabilize the industry if they paid more attention to the problem of warding off untimely frosts. The average losses are too high. Many have found that use of orchard heaters pays and it would be better for the industry if they were far more generally used.

Apples for Europe and New York Market

A Message to Better Fruit Readers

A FRUIT GROWER said the other day—"The only way to satisfactorily market a crop, is to have someone on the spot to look after your interests, or to do it in person."

Of course, the latter method would give you a certain amount of personal satisfaction, but the cost of travel and time in New York, or a foreign market, would be prohibitive. Besides, this is not necessary—for our organizations in New York; and Liverpool and London, England, are maintained to serve the grower. We are rendering this service to many growers and organizations in the Northwest and east, and we pride ourselves in being able to serve these fruit men year after year, and market their fruit at highest market prices.

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Checks are mailed to shippers promptly—in fact, we aim to mail them immediately fruit is sold. In the case of export shipments, daily cable advice from our London office enables us to mail checks within a few hours.

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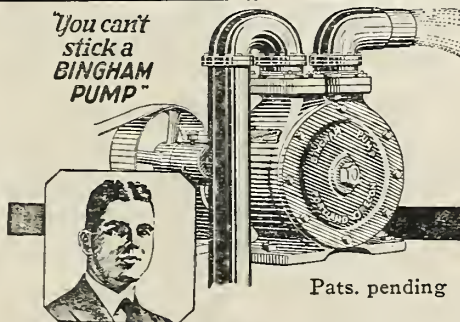
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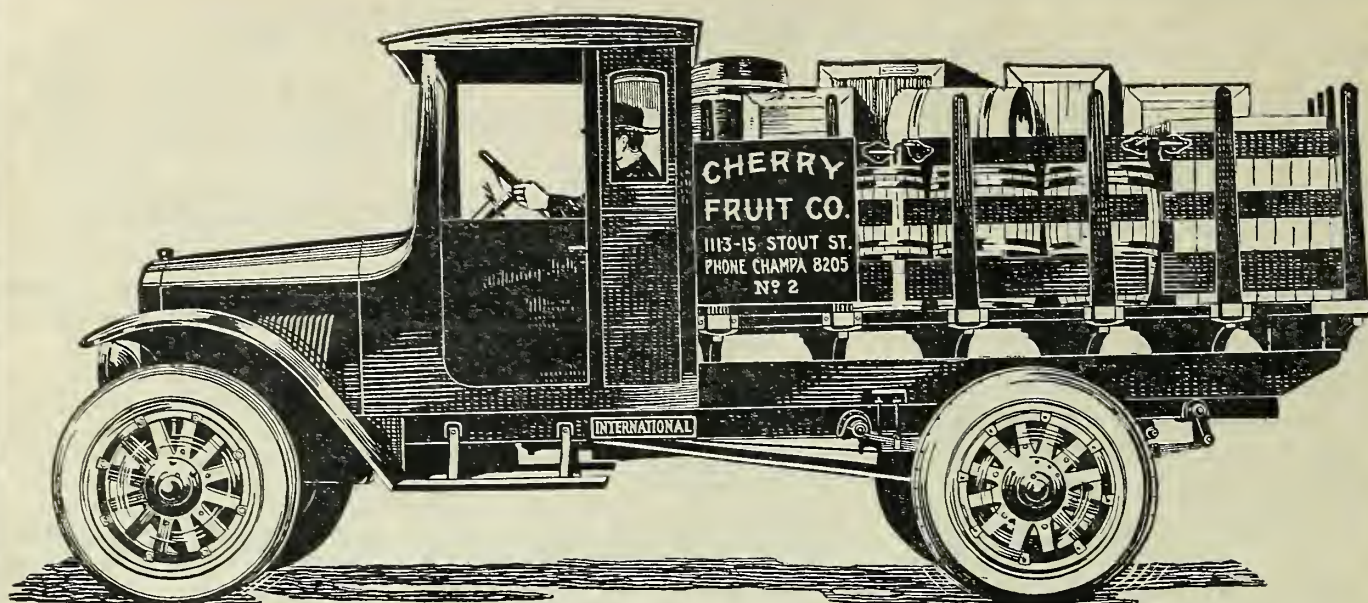
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Orchard Profits and the International Speed Truck

JUST as thousands of McCormick-Deering dealers have increased their service facilities with International "Red Baby" trucks, so are many orchardists enjoying successful partnerships with the "Red Baby's" brothers. After all, the service is much the same—in each case the International is helping its owner by doing all important hauling at a low ton-mile cost.

Undoubtedly there are many jobs on *your* orchard farm that could be done better with a good motor truck. Why don't you make it a point to talk the matter over with the McCormick-Deering dealer in your community? You will find the International Speed Truck has a number of features that mean easier, more dependable farm transportation.

For the average orchard or farm the Speed Truck affords ample capacity—for heavier work there are other sizes as listed at the left. Each model is sturdily built, and is backed by the International Free Inspection Service Policy that provides free inspection of the truck at regular intervals.

International
MOTOR
TRUCKS

Sizes:

2,000-lb.,	Speed Truck
Model 21,	2,000 lb.
Model 31,	3,000 lb.
Model 41,	4,000 lb.
Model 52,	5,000 lb.
Model 61,	6,000 lb.
Model 101,	10,000 lb.

*Buy International Motor Trucks for
Low-Cost Hauling*

INTERNATIONAL HARVESTER COMPANY

CHICAGO OF AMERICA USA
(INCORPORATED)
93 Branch Houses and 15,000 Dealers in the United States

The Federated Fruit and Vegetable Growers, Inc., has now been fully organized and on January 1, 1923, will take over the staff, accounts and contracts of the American Fruit Exchange. The fol-

lowing have been elected as the officers: President, J. S. Edward, Redlands, Cal.; vice-president, E. P. Porcher, Florida; vice-president, W. B. Armstrong, Yakima, Wash.; secretary, C. E. Durst, Chicago;

treasurer, Alexander M. White, New Jersey; general manager, Arthur M. Rule.

Please mention **BETTER FRUIT** when writing to our advertisers.

New Explosives

AN IMPORTANT development in agricultural explosives aimed directly at reducing the cost of farm blasting has just been announced by the Du Pont company. After many months of experimentation, the chemical and manufacturing forces of that company have perfected a dynamite with a double base of modified nitroglycerin and gun-cotton which is non-freezing, does not produce headache, and is said to effect a saving of about one-third on the dollar.

The new explosive is called "Dumorite," and is especially suitable for such farm work as blasting, stumping and tree planting, although it is equally powerful and efficient for quarrying and some other industrial operations.

In order to finally arrive at the perfected explosive, several hundred trial mixings were made up, all of which were carefully studied and analyzed by explosive experts. The final "powder" was then subjected to every possible test. Field trials were conducted in different parts of the country under varying conditions as to temperature, conditions of soil and kind of work.

The exhaustive tests made both in the field and in the laboratory under the supervision of experts demonstrated that the new "powder" is as powerful, stick for stick, as regular 40 per cent dynamite, under ordinary conditions. The importance to farmers, as regards cost, lies in the fact that a case of the new explosive contains approximately one-third more sticks and that, therefore, at the same price, one-third more work can be done.

Poison Spray Effects

THE purpose of a recent investigation by government experts was to ascertain the amount of arsenic of lead and copper remaining on the fruit after spraying, and to find out if the amount would prove injurious to the consumer.

The result of the investigation is that with regular spraying one pound of arsenic lead to 50 gallons of water there will be very little of the poisonous metals left, not sufficient to injure the consumer.

The past two or three years some growers have lost considerable fruit on this account, cites the new bulletin of the government on the subject, No. 1027 of the Department of Agriculture.

THE dates of the annual meeting of the Washington State Horticultural association are December 11-14. While the program has not yet come to hand, arrangements have been under way for some time and helpful and informative matters are sure to be presented. The meeting will be held in Spokane. It will be followed on December 15 by the annual grade and pack conference.

—what 2 cents will do

Hall's Nicotine Sulphate when diluted with water according to directions makes a powerful spray that costs only two cents per gallon.

Take advantage of this economy. It may mean the difference between a bumper crop and an orchard full of culls and dwarfs.

Nicotine is the most effective known poison against soft-bodied, sucking insects. And Hall's Nicotine Sulphate is guaranteed to contain 40% pure nicotine. It is made under scientific processes which secure an even composition and absolute purity.

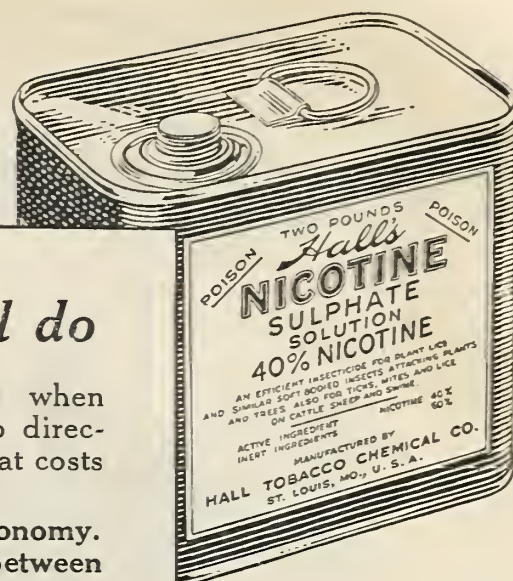
Being a vegetable poison it will not harm fruit or foliage.

Ten-pound tins, \$13.50; two-pound tins, \$3.50; half-pound tins, \$1.25.

Buy from your dealer. If he cannot supply you, order from us direct.

HALL'S
NICOTINE
INSECTICIDES

HALL TOBACCO CHEMICAL CO.
3949 Park Ave., St. Louis, Mo.

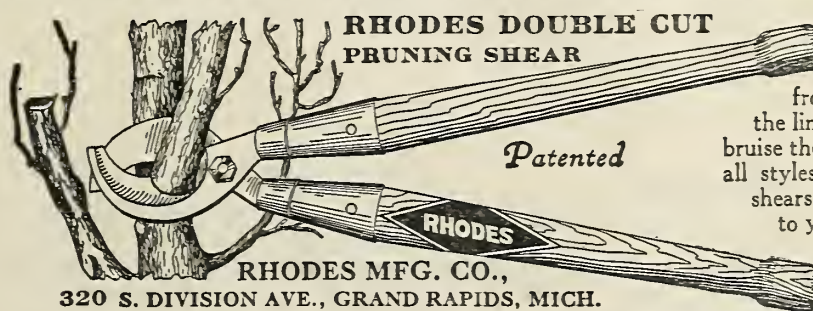


Hall's Tobacco Dust

Very effective where dusting is preferable to spraying.

Finely ground and guaranteed to contain a full 1% nicotine.

100-pound
sacks\$4.50
2-pound drums .35



RHODES MFG. CO.,
320 S. DIVISION AVE., GRAND RAPIDS, MICH.

THE only pruner made that cuts from both sides of the limb and does not bruise the bark. Made in all styles and sizes. All shears delivered free to your door.

Write for circular and prices.

Get More Money For Your Fruit

You can average higher prices for your fruits by selling them at public sale than in any other way. And the selling cost will be lower. In addition, you get your money within twenty-four hours after sale. Write for free copy of booklet, "More Dollars for Fruit Growers."

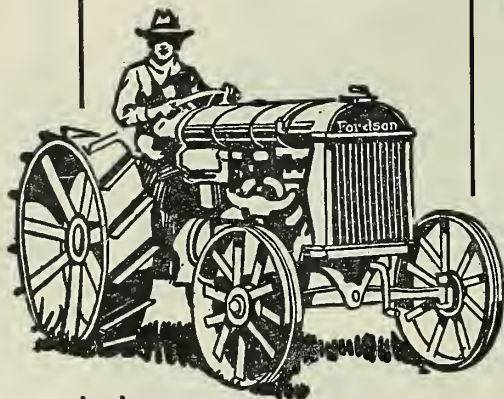
The Fruit Auction Co.
Established 1896
202-208 Franklin St., New York, N. Y.



YOU'LL be surprised at the little cost at which you can make your house look distinctive. The window cut accompanying this ad, is known as the "Queen Anne" design.

For an additional \$15 or \$20 your whole house can have this classy window. Before you finish building send for our catalog. Rovig, 2227 First Avenue South, Seattle. "Better Millwork."

Fordson



\$395

F. O. B.
DETROIT

Plows
Mows
Harrows
Threshes
Pumps Water
Grinds Feed
Fills the Silo
Runs Portable
Mills

Does All Kinds
of Draw Bar
and Belt
Power Work

Tractor

The way to better crops, shorter working hours and greater profits.

Fordson saves time, labor and money in taking care of every power job.

The original cost is low, costs little to operate, is powerful, durable and dependable.

CLIP AND MAIL COUPON TODAY

Northwest Ford Dealers

OF WASH., ORE.,
IDAHO and MONT.

DEPT. B, 700 FAIRVIEW AVENUE, SEATTLE
DEPT. B, EAST 11th and DIVISION STS., PORTLAND

Please send me free information on Fordson Tractors. (Mark X in square opposite literature or service desired.)

- ☐—Fordson Tractor Manual.
☐—The Fordson at Work.
☐—Free demonstration. (State purpose for which Tractor is intended.)

If you own a Tractor, state what make.

Name.....

Address.....

Fine Meetings

HIGHLY successful meetings were held by the Oregon State Horticultural society and the Western Nut Growers' association at Corvallis, November 23-25. The program of the nut growers occupied the final day. By many of those who attended these meetings were considered the best and most profitable the two organizations had ever held. There were well-balanced programs and some lively discussions of topics and problems that confront the growers.

Courtesies extended by faculty members and students of Oregon Agricultural College added much to pleasures and entertainment of those in attendance. The annual horticultural show of the college, held at this time, proved a center of interest for the visitors.

In the elections held the horticultural society selected J. B. Pilkington, well-known Portland nurseryman, as president. He succeeds Earl Percy of Salem, who presided at the sessions at Corvallis. L. T. Reynolds of Corvallis was elected vice-president and C. D. Minton, veteran worker in this capacity, was continued as secretary-treasurer. The nut growers elected Ben Dorris of Springfield as president and re-elected Professor C. E. Schuster of Oregon Agricultural College, as secretary-treasurer.

Sweet-Drying Prune of Promise

(Continued from page 10)

All of the tests this year tend to bear out this claim:

A test by Mr. Jones of Myrtle Creek, Oregon, gave 63 per cent of dried prunes running practically 30 to the pound.

Another test by Mr. Best at Lookingglass, Oregon, west of Roseburg, gave practically 50 per cent shrinkage, running about 34 prunes to the pound. Still another test by Mr. Brown at Dallas, Oregon, went better than 50 per cent dried fruit, making about 36 prunes to the pound.

These tests in the face of the low sugar content generally found in prunes this year seem to bear out all the claims made for this new prune wonder which gives both size of fruit and high sugar content, together with that exquisite date-like flavor that makes it the prune par excellence.

Developing Cultivated Blueberry

(Continued from Page 6)

third summer a crop worth picking for its commercial value.

Low brush hybrids resulting from a cross of Brooks, a high bush (*Vaccinium corymbosum*) from New Hampshire, with a selected low bush (*Vaccinium angustifolium*) from the same state, have been carried to the second generation. The very interesting results, from the breeder's standpoint, Mr. Coville will discuss in a future publication.

From a practical standpoint these low bush hybrids promise to be very valuable. Among them are plants yielding fruit which ripens in New Jersey as early as that of the native wild low bushes. The berries of the latter are small and insipid, but the berries of some of the early low-bush hybrids are large and of fine flavor. For New Jersey they promise excellent berries ready for market from June 15 to 20.

Among other hybrids, plants can be selected which will carry the blueberry season, in New Jersey, up to or beyond September 1. The size of blueberries has also been increased by breeding and we look forward to berries an inch in diameter.

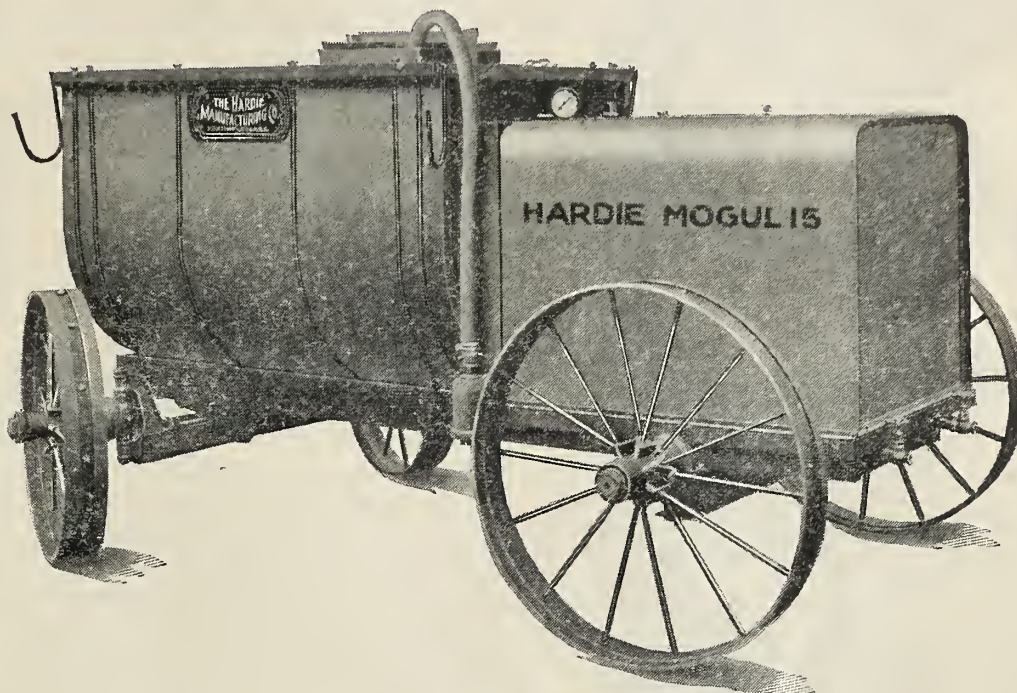
OTHER PARENTS NEEDED—For this breeding work we wish to secure fine plants from sections of the country with climate appreciably different from that of New Jersey, such as New England, near the Great Lakes or the Carolinas. We made an effort last year to locate in other parts of the country, plants with berries three-fourths of an inch in diameter, or just the size of a cent. We offered \$50 each for such plants, packed according to directions and delivered to the nearest express office—we to pay the transportation. The offer was advertised widely and I received hundreds of samples, none of which approached the best New Jersey berries in size.

The Hardy Mogul

THE Hardy Mogul represents a forward step in building Power Sprayers. Constructed to give the same effective spraying which has characterized Hardie machines for 20 years, it possesses additional interest to every fruit grower by its insurance of a longer working life.

By affording the pump and engine protection from dust and dirt we prolong the working life of the sprayer and give an added freedom from trouble.

Its large capacity and high pressure effective spraying make it a powerful defense against insect pests.



No orchardist need be told the money value of:

- A spray solution freer from sand and sediment.
- A gas mixture of gasoline and dust-free air.
- A pump and engine running smoothly and cool in a clean space.

Write us today for the Mogul circular

THE HARDIE MANUFACTURING COMPANY

55 N. Front St.

Portland, Oregon

SIMONS, SHUTTLEWORTH & CO., Liverpool and Manchester

SIMONS & CO., LTD., Glasgow

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SIMONS (Southampton) LIMITED, Southampton

Agencies and Representatives in Every Important European Market

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OUR SPECIALTIES ARE APPLES AND PEARS

SERVICE
IS OUR FIRST N-AIM

**PERFECT
FRUIT
LABELS**

**THE
SIMPSON & DOELLER
CO.**
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PORTLAND, OREGON.

**GET OUR SAMPLES
AND PRICES**

**WE CAN FILL YOUR
ORDER FOR STOCK
APPLE, PEAR, CHERRY
AND STRAWBERRY LABELS
IN 24 HOURS.**

Are you a reader?



OF INTEREST TO GROWERS AND SHIPPERS OF FRUITS
AND VEGETABLES. \$1 A YEAR. SEND FOR SAMPLE COPY
ADDRESS
Skinner Packing House News
THIRD STREET
DUNEDIN --- FLORIDA

**Nice Bright Western Pine
Fruit Boxes and Crates**

Good standard grades. Well made. Quick
shipments. Carloads or less. Get our prices.

Western Pine Box Sales Co.
SPOKANE, WASH.
Catalog mailed on request.

FUTURE OF COMMERCIAL CULTURE
—We believe commercial culture of these better blueberries has a great future, that in a few years it will be yielding large revenues from thousands of acres that are now waste land.

At Whitesbog we now have about 25 acres set with blueberries. This land is in the Pine Barren region of New Jersey and was never cultivated before. It has been considered worthless. In 1921 we sold 500 bushels of blueberries which were picked from about 12 acres on which a large proportion of the plants were yielding their first or second crop.

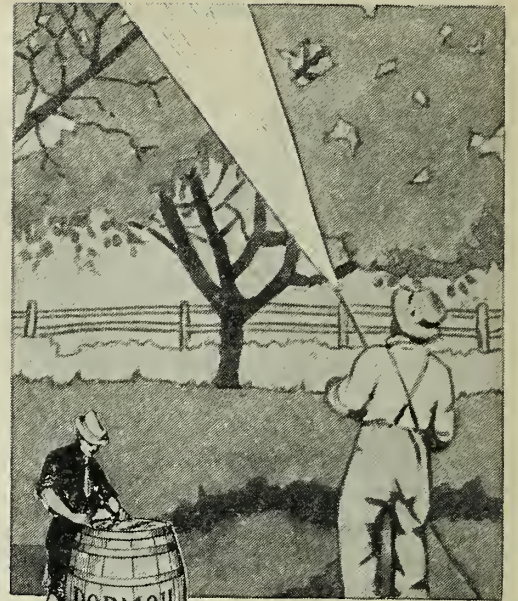
The plants were seedlings under trial. They were bred from selected parents and their berries are much above those of wild plants in average size and quality. The fruit from each bush, however, is different from that of every other bush and much of it is very ordinary.

MARKETING—In considering the marketing problems we have tried to look forward to the day when we could furnish thousands of crates of blueberries, thoroughly dependable in their superior size and quality. In 1921 about half of the crop of 500 crates went to hotels, restaurants, steamboat lines, etc., which ordered regular shipments, once or twice a week, at a flat price per crate for the season. These regular customers received the best of the berries and the others were sent to a commission house in New York. For the latter we averaged nearly or quite as good a price as from the regular customers. The average price received last summer was approximately \$12 per bushel f. o. b.

It is encouraging that the regular customers who have been buying cultivated blueberries for several years are constantly increasing their orders. They tell us that even at last year's high prices blueberries were the most economical fruit they served. There is no waste—no hulls, no seeds of appreciable size, and blueberries keep well. One customer, who two years ago took two crates twice a week, last summer took eight crates once a week. He says that our blueberries keep so well the saving in transportation charges of one shipment over two is well worth while.

IN HOME GARDENS—These better blueberries are very desirable in the home garden both for their berries and their beauty. Judging from the limited trials we have been able to make it seems a comparatively simple matter to provide comfortable quarters for blueberries in most home gardens. The requisites you remember are an acid peaty soil, good drainage and a constant supply of moisture.

Peat may be defined as vegetable matter decomposing under conditions which arrest the decomposition at a comparatively incomplete state. For providing peaty conditions in the home garden partially rotted sawdust may be used, par-



**For a Healthy
Orchard
Spray with**

DORMOIL

"The Superior Spray"

Dormoil is recognized as the superior oil spray. Its efficiency and general spray utility are widely recognized.

Controls Leaf Roller

Hood River orchardists have been relying exclusively upon Dormoil for many years. Official tests in various parts of the country have proven again and again that Dormoil is the most efficient spray for the control of leaf roller. Washington State Horticultural Officials have specifically and exclusively recommended Dormoil for its control.

**Controls San Jose
Scale and Other Pests**

It has been demonstrated that Dormoil affords a reliable means for scale control—in many cases where Lime-Sulphur Solution failed to give the desired protection. Dormoil is preferred on account of its many advantages. It destroys various forms of Aphids, Mites and pear Psylla. It rids trees of Mosses and Lichens. It is the best clean-up spray to be found.

An Efficient Spreader

Dormoil has excellent spreading qualities and on account of its insecticidal value even at the dilution used, it is preferred by those who have tried it.

WRITE FOR FREE BOOKLET
"DORMOIL WINS," telling of
results of official test.

**Hood River Spray
Company**

HOOD RIVER, OREGON

The World, Our Orchard Our Market, The World

"Throw Medicine to the Dogs"

—Shakespeare

Eat Apples

Don't look at the Brands—all apples are good, some are better. Brands don't mean anything.

Whether packed in boxes or barrels or drygoods cases does not make them any the less healthy. Apples are nature's remedy and most efficient tonic.

Apples, like bread, are the UNIVERSAL FOOD.

Apples at breakfast are nature's physic.

Apples at luncheon are nature's tonic.

Apples at dinner are better than any medicine for your digestive organs.

Apples immediately before retiring are nature's greatest and best dentifrice.

This advertisement is the first of a series of short and trenchant articles which we will publish from time to time, with the object of increasing the consumption of apples regardless of brands or where they were raised. We believe this the only sane method of putting before the consuming public the real value of all apples, and increasing the sales thereof.

Steinhardt & Kelly

273-277 Washington Street

102-106 Warren Street

NEW YORK

Cordoba 2260 Buenos Aires
ARGENTINE

Rua de Rosario 102 de Janeiro
BRAZIL

FIELD OFFICES:

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Phoenix, Ariz.
Las Cruces, N. Mex.

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Brawley, Cal.
Tampa, Fla.

Laredo, Tex.
Clearwater, Fla.
Calpatria, Cal.

Yakima, Wash.
Wenatchee, Wash.



**SERVICE
FIRST
GOOD
SERVICE
ALWAYS
JUSTIFIES
ITSELF**

Inferior service is always discrediting itself. This is true of everything fashioned by the hands of man, from a shoelace to a locomotive. It is particularly true as applied to the Perishable Industry. The penalty of the man who wants "half-price" service is **THAT HE INVARIABLY GETS IT.** The problem of the giver of "bargain" service is, **HOW MUCH CAN HE LEAVE OUT OF IT!** The problem of the giver of **QUALITY** service is, **HOW MUCH CAN BE PUT INTO IT!**

For over 60 years we have been selling fresh Fruits and Vegetables on the **QUALITY** principle, the principle of putting into our service everything that can make it **SUPREME** in its field.

Get in touch with us—**THE COMMISSION MERCHANTS OF TRIED SERVICE** and proven efficiency—and let us explain our methods of handling your shipments.

C. Wilkinson's Sons

(RALPH B. CLAYBERGER)

Carlot Receivers and Distributors
Fresh Fruit and Vegetables Exclusively on Consignment

134 Dock Street
Philadelphia, Pa.

Philadelphia's Oldest Commission House
Located in this one spot for over sixty years

(Founded 1861)

tially rotted oak leaves or pine needles or other leaves which rot slowly. Leaves, such as maple, which rot quickly, will not answer the purpose.

In lighter, well drained soils the addition of six or eight inches of this partially decomposed vegetable matter dug into the soil would be sufficient preparation. The peaty material provides both plant food and the required acidity. In heavy soils it is safer to dig a trench three or four feet wide and about a foot deep and fill with a mixture of two-thirds sand to one-third of the peaty material. The after care consists of the maintenance of a mulch of leaves about the plants and adequate watering.

Blueberries have no thorns and for all the year around beauty few plants can compare with them. In the spring the young shoots and leaves of many blueberry plants are a rich bronzy red. At this season the trial fields and the hedges of wild bushes along our dams show the greatest variety of rich and delicate tints. One plant has dark bronzy leaves and white flowers, the next displays its clusters of pink buds against the daintiest green. Other plants show a harmony of pink buds with ruddy leaves or a contrast of green and white. A cold spring brings the greatest variation of color. Then, in early May perhaps, comes a day as warm as mid-summer, and, as with a touch of magic, all the blueberry plants assume their work-a-day dress of green. For a few days longer the air is filled with an elusive spicy fragrance and the fine high orchestra of the bees; then the plants settle down to the serious business of perfecting the fruit.

The blueberry fields are never much lovelier than just before the berries are ready to pick. The blue of the ripe berries and the pink of those that are ripening contrast charmingly with the rich green foliage. Before the berries are all picked the year's sprouts begin to show above the tops of the plants. These start at or near the ground, and on well established vigorous plants grow from three to four feet in a season. Through August and early September these nodding plumes are the most conspicuous feature of the blueberry fields.

With the first frost the red flames up again. Most of the plants are brilliant in autumn coloring, some astonishingly so. As the same plants hold the same place each year in the autumnal color scale there is great possibility of choice for ornamental purposes.

CONCLUSION—Blueberries are found from the Gulf coast to Labrador and Alaska; in swamps and high on mountain sides. The better varieties we are developing in New Jersey may not be well suited to all localities. The methods employed at Whitesbog, however, I am sure are well suited to developing better blueberries for every locality where they are

already found. These methods include selection of the best local bushes and testing them under cultivation with Mr. Coville's underlying principles well in mind. Then if they prove worthy he will be glad to cross the best of them with the best plants from other localities. Thus better blueberries may be provided for most every part of the country.

OREGON

FOR the full month of October the Oregon Growers' Co-operative association paid out \$1,044,172, of which amount the packing corporation subsidiary paid \$170,765. Most of the money expended by the packing corporation was for materials and labor, but the great part of the total paid by the association went to prune growers.

▲ ▲ ▲

GROWERS of Jackson county were elated by the fact that their exhibit at the land products show in connection with the Pacific International Livestock exposition in Portland won the sweepstakes prize on apples. This was on a box of Spitzenbergs. First prize was also captured on Delicious, Winesap and Winter Banana apples and Bosc, de Anjou, Comice and Winter Nelis pears.

▲ ▲ ▲

LATE reports showed that approximately 137,000 pounds of English walnuts had been brought to the Oregon Growers' warehouse at Salem, from Willamette valley points. There had been received about 3000 pounds of filberts. Both kinds have been selling at an average price above 20 cents, the best grades hovering near 30 cents a pound.

▲ ▲ ▲

COLONEL HENRY E. DOSCH, secretary of the State Board of Horticulture, is predicting a real future for the growing of figs in western Oregon. He says that several tracts have been set out and that in three years the state will be producing all the figs needed for home consumption. Colonel Dosch was the pioneer in Oregon in introducing and popularizing the English walnut.

▲ ▲ ▲

ACCORDING to W. S. Nelson, head of the horticultural bureau of the Wasco County Chamber of Commerce, 20 acres of spinach will be planted next spring in the Columbia river lowlands. A guaranteed price of \$25 a ton by The Dalles King's Food Products company is causing ranchers to turn to spinach growing.

▲ ▲ ▲

ROSENBERG Brothers have installed equipment at their spray plant on the Bear Creek orchard, Rouge River valley, to turn out 2000 barrels of lime-sulfur spray. They started the plant to supply their own needs, but decided to expand, order lime and sulfur by the carload and supply most of the needs of the valley.

▲ ▲ ▲

RECENTLY there was completed at Hood River by a Portland concern, a film showing "The Life of an Apple." Parts of the film were made throughout the season, beginning with blossom time.

▲ ▲ ▲

ACCORDING to C. E. Stewart, Lane county fruit inspector, hundreds of acres of Italian prunes, walnuts and filberts have been planted in Lane county this fall. There has been especially heavy planting of nuts and many had to send to California to obtain nursery stock.

We have been getting a great lot of inquiries from our advertisement.—Martin Bros., Brownsville, Oregon.

J. B. FREET, West Side grower at Hood River, packed out 9000 boxes from his 10-acre apple orchard. C. C. Paddock, a neighbor, packed 7000 boxes of Newtowns from nine acres of 12 and 13 year old trees.

AT A recent date it was reported that the Rogue River Canning company at Medford had made a total pack of 40,000 cases or 40 carloads of products. Berries, cherries, apricots, string beans and tomatoes constituted most of the pack. The company recently installed vinegar making equipment.

BY THE time this magazine is in the hands of the readers the big new apple warehouse on Terminal 4, in Portland, will be ready for use. It will have space for 300,000 boxes at one time, under full ventilation. The warehouse, built by the dock commission, is for the storage of apples awaiting shipment by water.

DOUGLAS county has 6000 acres of prune trees and a like amount of apples and pears. The apple acreage is 4000 and that of pears 2000 acres. This year's prune crop is estimated at 15,000,000 pounds, dried, with a value of \$1,200,000.

WORD has reached Portland that the Chilean government plans soon to send an expert to this section of the northwest to study the apple situation. Experimental shipments of fresh fruits sent to Chili have gone through very successfully, it is stated.

WASHINGTON

AN UNUSUALLY high record for yield of Delicious apples was set this season by the six-acre orchard of Robert Robinson, near Yakima, as it produced 4512 boxes, or an average of 752 boxes per acre. The crop is said to have run 60 per cent fancy and to have averaged 113 to the box. The orchard is 11 years old and clover has been used as a cover crop.

EARLY in November three cars of the specially boxed gift apples intended for the holidays were shipped from the Wenatchee Skookum growers' warehouse to Chicago. The cars went forward with mammoth banners on the sides, admonishing every beholder to "Eat Wenatchee Apples."

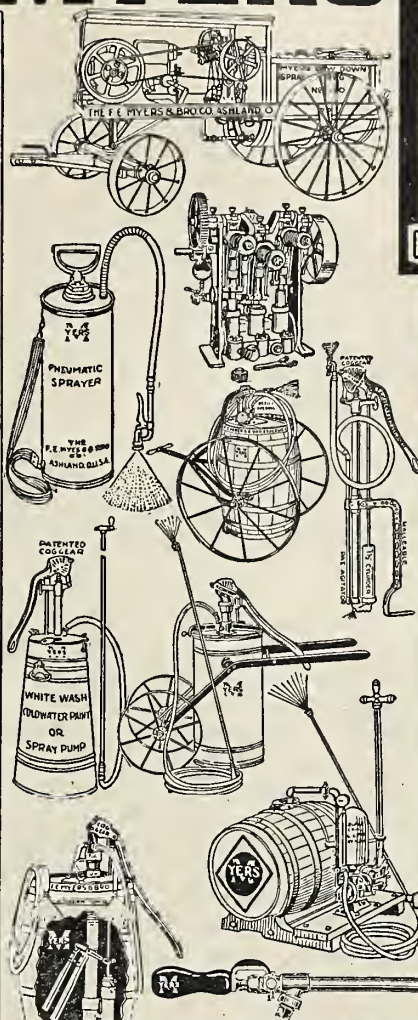
MRS. MINNIE MARKEL set a packing record for the Yakima district by turning out 251 boxes of Romes in 8½ hours, working for the Orchard Securities company at Moxee. Her record on Winter Nelis pears was 168 boxes in 9½ hours.

THE Everett Fruit Products company, Everett, Wash., recently opened for use its new two-story tile warehouse. It is estimated that the season's business will aggregate \$750,000 as compared with \$450,000 in 1921. The concern has already shipped 25,000 cases of loganberries, 5000 cases of pears and 500 cases of raspberries by water to Europe.

TESTS of the cooking qualities of the eight common varieties of apples were under way recently in the domestic science department of Washington State college, Pullman. The tests included the making of sauce and pies, and canning and baking. The varieties used were Jonathan, Winesap, Rome, Delicious, Yellow Newtown, White Permain, Spitzenberg and Winter Banana.

ROBERT CUMMING has been appointed vice-president and general manager of the Earl Fruit company of the Northwest, headquarters at Spokane, by Joseph Di Giorgio, the presi-

MYERS SPRAY PUMPS



You are interested in

spraying. You realize its importance and what it means to you in the production of larger and better crops of fruits and vegetables.

Perhaps you have but a few fruit trees or just a small orchard or vineyard to spray. Or, you may live in one of the great fruit belts where thousands of acres are planted to trees, and where spraying is carried on extensively and scientifically. No matter where you are located, or how large or small your spraying activities may be, the important point to remember is this—MYERS SPRAY PUMPS come in styles and sizes to fit any need. And don't forget—every Myers Spray Pump regardless of type or capacity is uniformly constructed out of the best of materials, is equipped with high grade hose, standard nozzles and accessories, and comes to you with a guarantee for efficient service in the application of spraying mixtures.

If the equipment you have been using is worn out, or if it is too small for your needs, or if you intend to organize or join a spray ring or club, write us for a copy of our new Spray Pump Catalog No. SP23. It's just off the press and ready for distribution, and contains illustrations, descriptions and valuable information about Myers Spray Pumps and How and When to Spray. Write today—the Edition is limited.

LEADING DEALERS EVERYWHERE SELL MYERS SPRAY PUMPS

CATALOG FREE ON REQUEST

FOR SPRAYING, PAINTING, WHITEWASHING AND DISINFECTING

THE F. E. MYERS & BRO. CO.
135 ORANGE ST. ASHLAND, OHIO.
MANUFACTURERS OF MYERS HONOR-BILT PUMPS FOR EVERY PURPOSE, HAY UNLOADING TOOLS AND DOOR HANGERS SINCE 1870



Pacific Northwest Distributors



Spokane, Wash.
Portland, Oregon

BUY FROM THE LOCAL MITCHELL DEALER

Are you interested

in knowing more about the work done and results obtained by the proper use of commercial fertilizers? Experiment Stations and farmers everywhere have for years been studying the question.

Twenty-five years of this work have given abundant proof that large profit may be obtained from the proper use of nitrogen.

Nitrate of Soda

furnishes this nitrogen in the cheapest and most available form which gives immediate and lasting results.

A new series of Bulletins with valuable information on the growing of all crops is now being issued. They will be published at intervals over a period of a year or more and should be in every farm library. A post card with your address asking for my Bulletin Service will bring them to you Free of Cost.

Dr. William S. Myers, Director
Chilean Nitrate Committee
25 Madison Avenue New York

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Use Heimerdinger Pruning Shears

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FLEUR DE SOUFRE, packed in
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LIKE particles float to every surface
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FUMING ACTION caused by the sun's rays.

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"The Truth About Sublimed
Sulphur," also price list.



SAN FRANCISCO SULPHUR CO.
624 CALIFORNIA STREET
SAN FRANCISCO CALIFORNIA

dent. He succeeds Frank Harkness. Mr. Cum-
ming was formerly secretary-manager of the
American Fruit and Vegetable Shippers' asso-
ciation at Chicago. J. S. Robinson was ap-
pointed vice-president and sales manager and
Mr. Whitman was named secretary-treasurer of
the Earl company. ▲ ▲ ▲

S. B. SHILEY of Lower Naches, Yakima val-
ley, harvested 7200 boxes of apples from
his 12-acre orchard, or at the rate of 600 boxes
per acre. The trees are 12 years old. ▲ ▲ ▲

FINAL checks for red raspberries, loganber-
ries, blackcaps and red and black currants
were recently mailed to members of the Puyal-
up and Sumner Fruit Growers' association. The
average net returns are reported as follows:
Raspberries, \$2.18; loganberries, \$2.03; black-
caps, \$3.04; red currants, \$1.53; black currants,
\$1.86. Bartlett pears brought \$30 a ton and
plums and pears the same. ▲ ▲ ▲

THE first starch factory to be built in the
state was put in operation at Toppenish dur-
ing November. G. C. Gifford, the manager,
stated that 800 tons of cull potatoes had been
contracted for. ▲ ▲ ▲

REPORTS from Zillah show that grapes did
not yield as well this year as last. Thomas
Granger harvested 5000 baskets from two acres,
as compared with 8000 baskets in 1921. The
hot season cut the yield, it was said. ▲ ▲ ▲

ONE of the best yields of apples around
Yakima was that of the five-acre tract of
Ed Remy, Jr., of Terrace Heights. He obtained
1864 boxes of Romes, there being 100 trees of
other varieties in the tract. ▲ ▲ ▲

THREE cars of squash shipped from Prosser
brought \$12 a ton f. o. b., to the growers.
As the yield runs as high as 20 tons to the acre
the crop is found a profitable one. ▲ ▲ ▲

THREE carloads of extra fancy Spokane val-
ley apples are being bought by George H.
Hammon, general manager of the Oakland
Motor Car company of Pontiac, Mich., for dis-
tribution as Christmas presents to employees at
the home factory and its 12 branches through-
out the country. There is a hint here for enter-
prising sales managers. ▲ ▲ ▲

THE Winesap crop of W. I. Stone, at Selah,
was the finest of that district, grading 80
per cent extra fancy. ▲ ▲ ▲

THE apple output from all warehouses at
Buena was 70,000 boxes, it was reported
two weeks ago when packing was completed. ▲ ▲ ▲

CALIFORNIA

HEAVY rains throughout California the first
week in November brought the grape season
to a close very generally. The rains and lack
of transportation were said to be responsible
for 10,000 carloads never being marketed. The
crop was the largest on record. A total of 34,-
800 cars had been shipped by November 6.
This figure was said to be 1000 cars more than
the combined deciduous fruit and grape crop
of 1920. ▲ ▲ ▲

AT Sacramento, December 12-14, will be
held the Fruit Growers' and Farmers'
convention. The opening session will be de-
voted to transportation problems, with repre-
sentatives from many western states on hand.
The Interstate Commerce Commission has been
asked to send representation.

A RECENT report from J. O. McKinney,
county horticultural commissioner at Hol-
lister, said growers of his section were success-
fully using paradichlorobenzene for the control
of peach borers. He reported costs as from
1 1/3 to 2 cents per tree for materials and
1 1/2 cents for labor. ▲ ▲ ▲

THE pear crop of the state exceeded all ex-
pectation and early estimates, shipments from
parts of the state amounted to more than 5700
cars, as compared with total shipments of 4160
cars last year. The growers had been rather
pessimistic until picking time was almost at
hand. ▲ ▲ ▲

FROM December 4 to 9, inclusive, the
farmers' short course on deciduous fruits
will be held at the University farm, at Davis. ▲ ▲ ▲

G. S. COTTERELL, assistant entomologist,
Gold Coast colony, West Africa, recently
visited the California department of agricul-
ture. He was making an investigation of
methods of controlling insect pests and of plant
quarantine and inspection procedure in the in-
terests of his home district. ▲ ▲ ▲

ESTIMATES are that California will have a
record walnut crop, ranging between
50,000,000 and 60,000,000 pounds, from the
87,000 acres of trees in bearing. Opening
prices were announced as 10 per cent below
those of last year. The association's open-
ing quotations were: No. 1, 22 1/2 cents; No. 2,
17 1/2 and fancy budded, 26. ▲ ▲ ▲

A RECENT check showed that 438 cars of
Bellflower apples had been sent out from
Watsonville, Cal., as compared with 722 cars by
the same date the year before. Ninety-six cars
were shipped east. About 35 per cent of the
Bellflowers went to the dryers.

IDAHO

C. C. VINCENT, professor of horticulture
at the University of Idaho, conducted an
apple packing school at Couer d'Alene this
season. He found that Kootenai county is fast
becoming one of the best fruit counties of the
state, he said, now having 6000 acres set to
apples. ▲ ▲ ▲

R. S. FRAZIER, rancher, living south of
Payette, has on his farm two persimmon
trees, one of which produced fruit this year.
These are considered the only persimmon trees
in the state. ▲ ▲ ▲

THE state seed show will be held at Burley,
January 9-12, 1923. There will be many
educational exhibits and a programme dealing
with crop problems and also one or more lec-
tures on poultry raising. ▲ ▲ ▲

POTATO and onion growers of Franklin
county, Idaho, and Cache county, Utah,
have organized as the Fruit and Potato
Growers' Co-operative association of Ogden.
They selected the W. R. Parvin company as
sales agents. ▲ ▲ ▲

THE state's potato crop is estimated to have
yielded 185 bushels per acre, for a total
of 14,615,000 bushels. The yield per acre
last year was the same, but the crop amounted
to only 10,545,000 bushels. ▲ ▲ ▲

IT IS estimated that the state harvested a crop
of 3,900,000 bushels of apples, where the
October 1 estimate placed it at 4,275,000 bu-
shels. The reduction was largely due to pre-
valence of worms.

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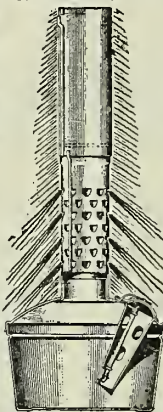
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Top Cover.



It is important that orchardists insure their crops against frost and freezes—because when killing frosts do come—the loss is appalling. These losses can be eliminated. DUNN Orchard Heaters completely solve the problem.

650 thousand DUNN Orchard Heaters in use by California citrus growers. Hundreds of thousands this type used elsewhere in U. S. Most effective because of exclusive patented features. Improved lower stack with perforations depressed to inside, radiates heat to side and down—with most heat at bottom of stack. Perfect combustion. All heat—no smoke. Joints fit tightly. Only draft is through patented down draft tube. Heat generated rapidly; maximum protection secured at once.

Improved stack
with perforations de-
pressed to inside.
Radiates heat to side
and to ground—with
most heat from bot-
tom of stack.



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is the only orchard heater with permanent asbestos lighting wick. Lights quickly and stays lit. Burns clean as a gas jet. Uses less oil. 9½ gallon heater burns 20 hours at 100% efficiency, without refilling. Patented swedge on bowl is hand grip for carrying heater. Made of 24 gauge extra heavy Keystone Copper Bearing Steel. Seamless bowl and cover.

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DO IT NOW

Marketing News of Interest

THE car shortage of the Pacific Northwest has not yet been eliminated. It has been relieved to a certain extent in the past three weeks, but there is still serious lack of cars at many shipping points. This fact continues to be a drag on the boxed apple market. Prices remain at moderate levels with no immediate prospect that they will advance materially. Supplies in most eastern centers are still moderate.

The latest report from New York thus summarizes the situation: "Supplies moderate; demand and movement moderate; market steady." These prices on sale to jobbers were quoted: Spitzenbergs, extra fancy large to very large, \$3.25, few \$3.50; medium, 2.50-2.75; small to very small, \$2-2.25; fancy large to very large, \$2.25-2.50, few \$2.60; small to medium, \$1.60-2; C, all sizes, \$1.50-1.75. Delicious, extra fancy, medium to large, \$2.75-3, few very large, \$3.25; fancy, all sizes, \$2.25-2.50. Newtowns, extra fancy, very large, \$2.65-3; large, \$1.75-2; fancy large, \$2.35-2.50, few \$2.75; medium to large, \$1.50-1.65. Jonathan, extra fancy, medium to large, \$2-2.10, few \$2.25; small to very small, \$1.65-1.90.

THE British apple market report for November 18, the latest available, showed that Oregon Newtowns were selling in London from \$2.69 to \$3.36 and extra fancy Jonathans at \$2.47 to \$2.67. At Liverpool extra fancy Newtowns were \$2.24 to \$2.91 and extra fancy Jonathans, \$2.13 to \$2.35.

GERALD DA COSTA who heads the firm of this name, with offices in New York and London and eight branches in the British Isles, who recently came from a four months' tour of England and the continent, reported that the English apple crop has been pretty well cleaned up. However, several large shipments are being brought from Switzerland and importations from Nova Scotia will approximate 500,000 boxes by January 1.

Mr. Da Costa is of the opinion that Jonathan, Winesap, Rome Beauty and Spitzenberg varieties can be sold to better advantage in our eastern markets than in England. As has been proved in the past, Newtown Pippins meet the greatest demand, he explained. Boxes of such a variety should run 135 to 225 in size, he said, to be most readily marketable. His own firm specializes in private selling and he does not advocate the selling of boxed apples at auction in English markets.

AROUND seven carloads of prunes for the English trade were packed by the Oregon Growers at their Forest Grove plant. The prunes were packed in one-pound cartons, in accordance with suggestions given last summer by Captain Leslie H. Wilson, a visitor from Great Britain. He stated that the English housewife seldom lays in a stock of food, advising the small-sized carton.

A TRIAL shipment of 25 boxes of Newtowns and 15 boxes of Spitzenbergs were shipped for Buenos Aires, Argentina, by the Apple Growers' association of Hood River. Before the world war shipments for South America were sent via New York. It is hoped that the more direct shipping may result in extensive export business to South American countries.

TOTAL storage space available in the big new plant of the Columbia Ice & Cold Storage company at Wenatchee amounts to 268 carloads and it was said to be well filled by the middle of November. Growers were truck-

Gypsum as Arsenate Poison Carrier

(Continued from page 13)

injure the foliage and they adhere well when shaken onto the plants. The sulphate sulfur contained in agricultural gypsum also serves as a plant food and as a result the plants blossom and fruit uniformly early and at a time when the prices are best.

In view of the fact that a mixture of arsenate of calcium and agricultural gypsum serve as an effective repellant of the cucumber beetle there can be no doubt

that the cucumber and melon industry will be made a specialty in sections where formerly cucurbits were grown successfully. This rejuvenation of the industry will bring the cucumber and melon markets closer to the centers of population.

In order to make the dust spraying operation most effective it is necessary that the spray be applied when the plants are small and tender. The secret of a successful campaign lies in the control of the beetle before it can infect the plants or lay its eggs and thereby make conditions favorable to wilting or the mosaic disease.

ing in their apples from long distances. On November 1 it was said that 4000 cars of apples were unprotected and growers and shippers were renting church and schoolhouse basements and private cellars and improvising various sorts of storage places for their fruit.

▲ ▲ ▲

IN THE final estimate on the apple crop made by District Horticultural Inspector Frank C. Nielsen, at Wenatchee, he estimated that 1700 carloads were ruined by worms and other minor causes after July. Most of the loss occurred close to Wenatchee in such early varieties as Jonathans, Winter Bananas, Delicious and Spitzbergers. While on August 1 the crop at Wenatchee was estimated at 3650 cars the latest estimate placed it at 2018 cars.

▲ ▲ ▲

REPORTS from Hood River, Wenatchee, Yakima and other apple districts show that they are still suffering for a lack of cars needed to move the crop. In Washington state the department of public works promulgated an order that preference be given the early varieties, in the spotting of cars received. This order met with general favor. Jonathans, Delicious, Staymen and Grimes Golden shipments are being given the preference under this order.

Wenatchee and Yakima shippers and growers have united in a move to sue the railroads for failure to provide cars sufficient for their needs. With this in mind shippers at Wenatchee had made formal demands for cars from day to day. They will introduce into the suit evidence that the Great Northern road had due notice that the district would require for movement of the apple crop between 13,000 and 15,000 cars. It will be charged that no adequate provision was made for meeting this requirement.

Our Inquiry Department

IWOULD like to see some articles on stationary spraying plants.—J. M., Prosser, Washington.

We would be pleased to give space to letters of any readers who have had experience with stationary spraying plants. If you have tried one or had experience with one kindly send us a letter giving the information you have and we will pass it on for the benefit of J. M. and other readers.

▲ ▲ ▲

PLEASE tell me if sulfur for a legume crop in the orchard serves as a fertilizer.—R. W., Payette, Idaho

According to the experts sulfur is a help to legume crops, particularly under semi-arid conditions. Careful experiments conducted in France over a long period to test sulfur as a fertilizing agent have brought favorable results.

A summary of the findings in France shows this: (1) That when distributed in cultivated soil it has the effect of increasing the crop. (2) That the quantity used has much bearing upon results, and between 360 and 530 pounds per acre are recommended. (3) That it should be applied as long as possible before the time the crop has need of nutritive elements. It is recommended that it be worked into the soil in the fall or early winter. (4) That the effects, showing in increased crop, healthier plants, greater resistance to drought and decrease of certain diseases, are largely due to the fact that sulfur makes assimilable the nutritive elements in the organic matter and certain minerals of the soil, notably potash.

THE COLLIS MOTORS

THIS is not introducing to you a new or untried power unit, but a better product under a new name. As satisfactory power the "COLLIS" is well known throughout the east. It was formerly known as the "Pierson."

The "COLLIS" 5 h. p. motor represents the best obtainable in Quality and Service. With its close throttling governor the "COLLIS" can be used with satisfaction on any work requiring from 2 to 5 horse-power. As a power unit for sprayer, duster or potato digger it is without peer. It will serve you equally well on wood saw, binder, milking machine or grinder.

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March 21, 1922

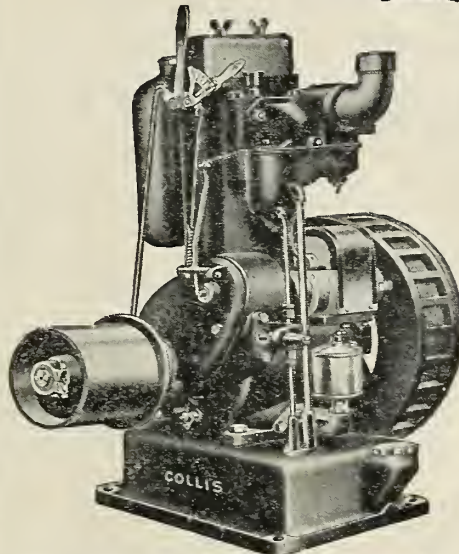
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While the engine is water cooled the unique cooling system reduces the quantity of water necessary to a minimum.

Taking it altogether, after the year of hard service under close observation, its work has been highly satisfactory and the writer believes that you have an engine that will make its mark with the trade.

Yours very truly,
(Signed) Leland Willis
Chief of Experiments

This letter
should
convince you



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Carlton, Oregon

IS THERE a successful method of poisoning or destroying field mice in an orchard? I can not put poison out unprotected because of my neighbor's chickens. Do you know of places where putting poison under inverted troughs has been tried? What kind of poison is best?—L. N., Seattle, Washington.

The use of strychnine, preferably on rolled oats, is the method most widely used by govern-

ment experts in destroying field mice. One method is to mix an ounce of soda and one-eighth ounce of saccharine with one ounce of strychnine alkaloid. Mix this into 20 to 25 pounds of rolled oats. In your case you should place it under troughs, as you suggest, or under boxes, or in old tin cans where the chickens can not reach it. The saccharine might be omitted, but is valuable in making the poison more palatable.

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Write for catalog and discount sheet; and, if a beginner, for Cottage Bee-Keeping, also for particulars of the MacDonald Aluminum Combs.

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Attorneys for Better Fruit Publishing Co.

With the Poultry

EGGS AND POULTRY PLENTIFUL

THIS fall and winter eggs and poultry will be plentiful and prices should be low enough to make them economical. Just now storage houses are full of eggs and farmers have increased their flocks of poultry to an unusual extent. On August 1, there were 4,812,248 cases of eggs in storage, which is about 35 per cent more than the average at this season for the last three years.

Eggs start moving out of storage in summer and the greatest sales of such eggs come in fall and early winter. As a rule, the bulk of storage eggs are sold before the 1st of January, the activity of the market after that date depending on whether the weather is severe or mild enough to stimulate egg production. An open winter practically eliminates the storage egg early in the season. But this year, regardless of the state of the weather, eggs should be available at very reasonable prices from the start.

Poultry farming, both as a specialty and as a side issue on other farms, has been one of the best paying lines of agricultural work during the last two or three years, which accounts for the large supplies on hand this year. Prices to the farmer, however, have now reached a low point on both eggs and poultry, and he is not marketing poultry freely, but is holding his birds for better prices or using them on the table at home.

▲ ▲ ▲

GROUND GRAIN NEEDED

A MASH composed of ground grains or their by-products and some form of animal protein is an essential part of a ration for both growing chickens and laying hens. The reason is that birds putting on growth or producing eggs can not assimilate enough nutriment from whole or cracked grain to supply the maximum need. When the grain is ground, says the United States Department of Agriculture, little work is required of the gizzard, and much more of the feed can be used in making flesh or eggs.

The scratch grain part of the ration, however, is needed to give the gizzard something to do in order to keep the birds in health. For laying hens the scratch grain thrown in the litter provides an incentive to needed exercise.

It was once thought that the mash should be fed wet to produce the best results, but experiments have proved that in spite of the slightly better palatability of the wet feed, the convenience of feeding it dry overbalances any slight gain in production. Feeding it dry is now the usual method. Digestibility is not increased by wetting.

The principal objection to the wet mash is that it requires too much labor. It must be moistened, then carried to the hens once a day, and the troughs must be cleaned after each feeding. Cleanliness is absolutely essential, because indigestion and diarrhea will result from feeding in dirty troughs. On the other hand, the dry mash hopper may be filled once a week or even less frequently, and needs no further attention. Hens do not overeat of dry mash as they sometimes do of wet feed.

▲ ▲ ▲

BOTH eggs and poultry are recognized as among our most valuable foods, but the United States Department of Agriculture is setting out to find definite information regarding their vitamin contents. Experiments are being carried on with rats and pigeons to show how they compare in this respect with beef, pork, and other common foods.

Protect Your Trees

FROM destructive rabbits, mice, borers and cut worms—from cultivator bruises and skinning. Eliminate costly replacement and save time lost in growth of young trees by using

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Quick and easy to attach—wrap this chemically treated wood veneer protector around the tree and tie at top and bottom. It will last for years.

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TREES and SHRUBS



FRUIT TREES budded from bearing orchards: Apple, Pear, Cherry, Peach, Plum, Prune, Apricot, Quince; Grape Vines, Shrubbery, Plants, Raspberries, Blackberries, Dewberries, Logans, Asparagus, Rhubarb, Flowering Shrubs, Roses, Vines; Hedge, Nut and Shade Trees. Carriage paid. Satisfaction guaranteed.

Salesmen everywhere. More wanted.

WASHINGTON NURSERY CO.

Dept. 175 Toppenish, Wash.

BOTH feed and care of 1,600,000 hens giving no returns were saved in 1921, reports to the United States Department of Agriculture show, when farm women, practicing for the first time the methods of identifying non-layers demonstrated by agricultural extension agents, culled these "loafers" from their flocks.

▲ ▲ ▲

WORMS are troublesome to poultry at this season of the year. The poultryman who watches the droppings for the first indication of worms can check them before they seriously injure the flock. Tobacco dust, 1 pound to 30 pounds of mash, is the most commonly used remedy for round worms.

▲ ▲ ▲

PULLETS should be hitting their stride now with 50 per cent production. If there are a lot of small, late hatched pullets in the house they will do better if placed by themselves and given separate feeding.

▲ ▲ ▲

GET a supply of the most-needed poultry remedies and keep them on hand for emergencies.

Bees and Beekeeping

Edited by AMOS BURHANS

AN INTERESTED reader writes and inquires "What ought I to have and how shall I start to keep a few colonies of bees?"

Of all the beekeeping questions I receive this one seems the most important. Some years ago I asked it myself, and in reply got a miscellaneous assortment of information some of which cost me many dollars and much time. The most expensive advice I received was from the party that I had the most faith in. But he, thinking that possibly I would not make a beekeeper, tried to get me started at the least possible expense and as a result almost kept me from becoming one.

He told me to buy a colony or two of ordinary black bees for \$4 or \$5 per hive, take them home and study them, watching their work and handling them for a season. So I purchased two colonies. After I began studying them and the hives that they were in, and began to find out some of the essentials of beekeeping for myself, I saw that I had taken the wrong advice.

These bees were cross, as are nearly all of the domestic black bees. In getting them transferred into a moveable frame standard hive they became sulky and did no work for the entire season, never making a pound of surplus honey. The queen in one of these colonies was old and worn out and she did not breed up enough bees the first fall, so the colony almost died out during the winter. These two colonies cost me \$10. I put in an entire summer with them, did not get a pound of surplus honey and I have always considered the time wasted.

Now here is what I should have done. The \$10 should have been sent to a breeder of good, purebred, three-band Italian bees for three or four frames of brood and a good tested queen, in a moveable frame hive. In any average year they would have built up to three or four colonies by careful manipulation. I should have bought a crate of five standard hives knocked down, and put them together. As the original colony built up to a strong, thrifty condition, I could easily have divided it.

The past spring I advised a neighbor to buy a good, gentle pure bred colony with a good young queen at the head of it and divide it up into other colonies as often as its strength and the season would permit. This fall he has four strong colonies to put into winter quarters. When his original colony had built up good and strong by June 1, he had his new hives ready. Putting one of the new hives on a new stand in his little beeyard, he removed from the original all the drawn comb and brood except one frame and the queen. This left on the original stand, all the flight bees, one frame of brood and the queen.

He filled out the old hive with frames containing full sheets of foundation. He put one frame with a full sheet of foundation into a new hive with the nine frames of brood, comb and honey. The new colony which was queenless immediately proceeded to raise a queen. All the young bees and the nurse bees stayed in it. In a little over two weeks a large number of the young bees had developed into field workers or flight bees and the new queen had hatched and was shortly mated and at work laying.

The second week in July he divided both colonies again by the same method and now has four good strong colonies. Dry weather in August forced him to feed them somewhat as the flow of nectar had almost ceased. Feeding a thin cane sugar syrup made of two quarts boiling water and one quart sugar, kept the queens busy and the work of drawing combs and other hive activities going on.

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When the fall flow of nectar came on shortly following the first fall rains, all four colonies were built up sufficiently so they could take advantage of it and fill their hives with honey to carry them through the winter. He could have saved considerable time in making his divisions if he had purchased laying queens and given them to the new colonies rather than waiting for them to rear a queen. Beginners could do no better than to imitate this plan.

My advice is to start with pure bred bees because they are so much easier handled than common black bees, because they are disease resistant, breed faster, work better in the hive, gather more nectar, do not run all over the combs and hive when being handled. If you want to go faster than starting with one colony, buy two or three or five.

But I would not advise the purchase of more than five colonies to start. After you have made a start the rest will come easy. Get in your car and visit some of the expert beekeepers in your section. If you have it in you to make a beekeeper you will absorb vast amounts of information.

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Statement of Ownership

STATEMENT of the ownership, management, circulation, etc., required by the Act of Congress of August 24, 1912, of the Better Fruit, published monthly at Portland, Oregon, for October 1, 1922.

State of Oregon, County of Multnomah—Before me, a notary public in and for the state and county aforesaid, personally appeared C. J. Owen, who, having been duly sworn according to law, deposes and says that he is the business manager of Better Fruit, and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 443, postal laws and regulations, printed on the reverse side of this form, to-wit:

1. That the names and addresses of the publisher, editor, managing editor and business managers are:

Publisher, Better Fruit Publishing Company, Inc., 281 12th St., Portland, Oregon. Editor, Ernest C. Potts, 902 E. 27th St. N., Portland, Oregon. Managing Editor, Jerrold Owen, 281 12th St., Portland, Oregon. Business Manager, C. J. Owen, 281 12th St., Portland, Oregon.

2. That the owners are: (Give names and addresses of individual owners, or, if a corporation, give its name and the names and addresses of stockholders owning or holding 1 per cent or more of the total amount of stock).

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CLIFFORD J. OWEN,
Business Manager.

Sworn to and subscribed before me this first day of October, 1922.

(SEAL) ROBERT L. RUSSELL,
Notary Public for Oregon.
(My commission expires April 29, 1925.)

UPON the closing of the valley peach pool of the American Fruit Growers, Inc., at Yakima, Manager F. E. Miller, announced that standard sizes, 84s and larger of Elbertas, netted 53.7 cents f. o. b., from which 7½ cents was deducted for loading and selling. The net return then amounted to 46.2 cents a crate. A few cars of smaller peaches netted 20 cents less.

ESTIMATES of the California Walnut Growers' association place this year's crop of walnuts at 50,000,000 pounds for the state, the heaviest crop since 1919. The crop has a value of between \$11,500,000 and \$13,000,000.

I like your fruit journal very much. It has been of a great deal of value to me in instructing my orchard men. (Subscription enclosed for one of them.)—W. C. Cox, Leavenworth, Washington.